Integrating a longitudinal ward placement into the hospital pharmacist pre-registration year: a design-based research approach

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Abstract

Background

Qualifying as a pharmacist in the United Kingdom typically comprises a four-year degree and one year of pre-registration training in the workplace, followed by a registration assessment. Within the hospital setting, the pre-registration year usually consists of short block rotations (1-3 weeks) through different areas. In medical education, longitudinal placements (minimum of 13-weeks), have demonstrated benefits over short block rotations. Longitudinal placements afford students more time, which communities of practice theory emphasises as important, for building positive working relationships that enable learning opportunities.

The aim of this research was to develop an alternative model for hospital pre-registration pharmacist training.

Methods

The design-based research approach underpinned this research, using learning theories and stakeholder engagement to inform the process.

Four iterative studies were undertaken: analysis and exploration of stakeholder views on current and proposed training models, design and construction of a ward placement, evaluating a prototype placement using alpha testing and evaluating a longitudinal placement using beta testing.

Results

The registration assessment was a barrier to exploring alternative pre-registration training models, such as a ward placement. Multi-disciplinary stakeholder engagement overcame this barrier and a longitudinal 13-week ward placement was constructed. A prototype placement revealed the design was suitable for pre-registration pharmacist training.

The longitudinal placement identified that pre-registration pharmacists became part of the ward team, which enriched their learning experience, supported their development and improved the ward pharmacy service. Recommendations for incorporating longitudinal placements into hospital

pre-registration training included identifying ward teams that had a positive learning culture and ward pharmacists who were passionate about developing people.

Conclusion

Longitudinal placements as part of hospital pre-registration pharmacist training present an alternative training model, which have additional benefits for pre-registration pharmacists, staff teams and patients. Further research into 13-week longitudinal placements is warranted to determine their effectiveness and impact on pre-registration/foundation pharmacist training.

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List of abbreviations

ACPE	Accreditation Council for Pharmacy Education
APPE	Advanced Pharmacy Practice Experience
CoP	Community of Practice
DBR	Design-based Research
FiY	Interim Foundation Year
FY	Foundation Year
GPhC	General Pharmaceutical Council
HCA	Healthcare Assistant
ICP	Integrated Care Pharmacist
IPPE	Introductory Pharmacy Practice Experience
IV	Intravenous
LPP	Legitimate Peripheral Participation
MPharm	Masters of Pharmacy degree
MR	Medicines Reconciliation
NHS	National Health Service
OPM	Older People's Medicine
PharmD	Doctor of Pharmacy degree
POD	Patient Own Drugs
Pre-reg	Pre-registration pharmacist
RPS	Royal Pharmaceutical Society
TTO	To Take Out discharge medication
UEA	University of East Anglia
UK	United Kingdom

USA	United States of America

Initials

DW	David John Wright
HK	Hannah Kathleen Kinsey
JS	Jeremy Sokhi
MC	Maria Christou

Publications, presentations and citations

Thesis associated publications

Conference abstract:

Kinsey, H. et al. (2018) ‘Pharmacist perspectives on a novel longitudinal ward-based programme for trainee hospital pharmacists’, Pharmacy Education, 18(1), p. 47.

Opinion piece:

Kinsey, H. (2020) ‘The pharmacy registration assessment must change if foundation pharmacist training is to succeed’, The Pharmaceutical Journal, p. online. doi: 10.1211/PJ.2020.20208636.

Non-thesis associated publications

Kinsey, H. et al. (2016) ‘Funding for change: New Zealand pharmacists’ views on, and experiences of, the community pharmacy services agreement’, International Journal of Pharmacy Practice, 24, pp. 379–389. doi: 10.1111/ijpp.12266.

Conference abstract:

Walji, M. et al. (2018) ‘General Practice placements for hosptial trainee pharmacists: Evaluation of learning support tools and outcomes’, Pharmacy Education, 18(July), p. 1.

Conference oral presentations

Lifelong Learning in Pharmacy conference 2018: Developing longitudinal ward placements for hospital trainee pharmacists (90-minute workshop).

Citations

Neale, B. (2021). Qualitative Longitudinal Research: The Craft of Researching Lives through Time. London: Sage.

Formal training

University of East Anglia Personal and Professional Development modules

- Introduction to ethics in health research
- Introduction to research project management
- Introduction to the research sector
- How to make the most of the UEA library resources
- Managing references with EndNote
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- Preparing for your viva

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Let us run with perseverance the race marked out for us, fixing our eyes on Jesus, the pioneer and perfecter of faith.

Hebrews 12:1-2

"…as a pre-reg…it's part of the job description to be in the way…cos obviously nobody knows who we are and…we don't really know what's going on…the first time we went onto the wards, we were just shadowing pharmacists…and when you're shadowing, you're inevitably in the way. Someone wants to get to the computer, someone wants to get to the notes and you're just stood there watching everything go on around you…but I didn't feel like I was in the way on [placement ward] which was quite nice…cos they [ward staff] all knew who I was and they knew why I was there and I was always around so…I felt like I had a place on the ward and I fitted into the team..."

Pre-registration pharmacist B

Chapter 1 Background

1.1 Introduction

This chapter provides an overview of the pharmacy profession, hospital pharmacy pre-registration training and the use of longitudinal placements to support learning in healthcare settings.

1.2 The pharmacy landscape

In the early 20th century, the role of the pharmacist centred on medicines supply, with most hospital pharmacists working within dispensaries. Hospital pharmacists in the United Kingdom (UK) first started assuming responsibilities for medicines-related activities on wards in the 1970s (Hall, 1970). The hospital pharmacy service gradually evolved to become more patient-facing over the next two decades, as ward pharmacy services were introduced. Pharmacists gradually transitioned from the dispensary onto hospital wards to order medicines and review prescriptions. The transition from a product-orientated to a patient-orientated service was formalised in the 1986 Nuffield Report as 'Clinical Pharmacy' which signalled the change in perception of the hospital pharmacists' role (Nuffield Foundation, 1986). Clinical pharmacy enabled pharmacists to become more involved with providing direct patient care such as advice at the point of prescribing, therapeutic drug monitoring, patient education and counselling (Cotter, Barber and McKee, 1994).

In 2014, the secretary of state for the UK Government commissioned a report to investigate how National Health Service (NHS) hospitals in England could become more efficient, reducing costs and variability between hospitals (Lord Carter of Coles, 2016). The report emphasises the need for hospitals to utilise their most valuable resource – their staff – in order to achieve this. Pharmacists were identified as an underutilised clinical resource for patients and as a result, it was recommended that hospital pharmacists spend 80% of their working time conducting patient-facing activities.

1.2.1 Patient Safety

The failure of certain hospitals to provide safe and effective care for their patients has been highlighted through reports outlining how patient safety was not upheld, leading to loss of life (Francis, 2013; Gosport Independent Panel, 2018).

At Mid Staffordshire NHS Foundation Trust, a negative culture towards patient care was cultivated by understaffing and a tolerance of poor practice, that eventually led to inadequate service provision (Francis, 2013). Patients died as a result of medication errors or omitted medicines, yet the report did not comment on the activities of the ward pharmacist or the pharmacy department. The General Pharmaceutical Council (GPhC) (the regulatory body for the pharmacy profession) were not called to account for the actions of any pharmacists and there were no fitness-to-practise cases brought forward (Colquhoun, 2013; Francis, 2013). The Royal Pharmaceutical Society (RPS) (the professional body for pharmacists), published recommendations for the pharmacy profession which included: checking that patients receive the correct medicines, providing a proactive medicines discharge service and documenting details of any changes to medicines in the discharge letter (Colquhoun, 2013; Royal Pharmaceutical Society, 2017).

At The Gosport War Memorial Hospital (a community hospital), 456 patients died (with a further 200 potential deaths) from opioid administration over a twelve year period (Gosport Independent Panel, 2018). The dose range prescribed for the opioids was wide and did not follow national guidance, the British National Formulary or local guidelines. Ultimately, the report found no clinical justification for prescribing, supplying and administering these opioids.

Unlike the Francis report, which was silent on the role of the ward pharmacist and pharmacy department, the Gosport report (published five years after the Francis report) provided information on the activities of the ward pharmacist and pharmacy department. Medicines were supplied directly to the wards; the pharmacist visited the hospital twice a week to check the ward stock and examine patients' drug charts, but no evidence was found that prescribing

decisions were ever challenged by the pharmacist (Gosport Independent Panel, 2018). It is possible that patients' notes may have been locked away and a culture of practice existed that meant the pharmacist did not get directly involved in the patients' care (Andalo, 2018). Notwithstanding, this practice highlights the lack of time the pharmacist spent in a patient-facing role and the lack of medication safety audits, which are now becoming a part of routine practice in all hospitals (Andalo, 2018; Godlee, 2018; Gosport Independent Panel, 2018).

The recently published NHS long-term plan affirms that pharmacy has a central role to play in the evolving NHS, particularly the expansion of the profession into General Practice and the establishment of multi-disciplinary teams to deliver integrated community-based healthcare (NHS England, 2019). Increasingly, the need to better utilise pharmacists in patient-centred roles, as members of the wider multi-disciplinary teams, is being recognised (NHS England *et al.*, 2014; NHS England, 2019).

1.2.2 The changing role of the hospital pharmacist

Whilst the opportunities for pharmacists to become more patient-facing and work as members of multi-disciplinary teams in both primary and secondary care, brings about exciting opportunities for the profession, they also bring a new set of challenges (The Pharmaceutical Journal, 2017). The rise of automated systems, such as robot dispensing, bar code medication administration technology and electronic prescribing, threaten 'traditional pharmacy territory' such as the supply of medicines (Altman, 2017). However, automation also provides an avenue for pharmacists to spend more time carrying out patient-facing activities, increasing their clinical autonomy, improving patient safety and reducing costs (Cotter, Barber and McKee, 1994; Green and Hughes, 2011; Macgregor, 2015; Wickware, 2019).

Whilst the Carter report advocated for hospital pharmacists spending more time in patient-facing roles, it did not recognise or address the additional training and education needs for pharmacists, pharmacy technicians and pharmacy assistants to take on these roles (Lord Carter of Coles, 2016). The Carter report made no explicit mention of the time or monies to be set aside

for training to support the pharmacy team to deliver a more patient-facing service.

1.2.3 Integrating pharmacists into ward teams

In an attempt to deliver a more patient-facing service, one hospital created a new role for pharmacists; the 'Integrated Care Pharmacist' (ICP). The ICP role combined the responsibilities of a ward nurse and a ward pharmacist into one. This dual role was intended to enable hospital pharmacists to work more closely with patients as a member of the ward team. The ICPs worked 12-hour shifts on alternate days on the same ward and undertook tasks such as; medicines administration, health observations and providing general care for their patients (Hung *et al.*, 2017).

These responsibilities were in addition to the 'traditional' role of the hospital ward pharmacist; performing medicines reconciliations, ordering medicines and counselling patients. Patient benefits attributed to the ICP included: reduced length of patient stay, reduced readmission rates and nurses' access to a pharmacist's knowledge when administering medicines. However, the ICPs were paid a band 6 salary from the nursing budget (one band higher than nurses receive) and this, coupled with the extensive induction the ICPs needed to acquire essential nursing skills for their extended roles, created friction between the nursing staff and the ICPs (Hung *et al.*, 2017).

This did not foster a healthy environment for promoting interprofessional working and all four ICPs resigned within twelve months of commencing their post. In spite of this, the patient benefits attributed to the increased pharmacy presence on the ward, must be acknowledged. The study went on to recommend that more ward-based training should be incorporated as part of pre-registration pharmacist training (Hung *et al.*, 2017). Receiving enhanced ward-based training earlier on in their career would have better equipped these pharmacists to carry out their ward-based activities in their ICP role.

1.3 Pharmacy education

Qualifying as a pharmacist in the UK takes five years; four years to complete a pharmacy degree and one year to complete a work-based pre-registration training programme. Both the degree course and pre-registration training programme must be accredited by the GPhC (General Pharmaceutical Council, 2019d). During the pre-registration year, the pre-registration pharmacist must produce a portfolio of evidence in support of having met the GPhC's 76 performance standards and pass the GPhC registration assessment.

During the pre-registration year, the pre-registration pharmacist (also referred to as a trainee) is supported by a pre-registration tutor, who mentors the trainee, facilitates the training programme and assesses their readiness to be a 'fit to practise' pharmacist (General Pharmaceutical Council, 2019c). This final 'sign-off' from the pre-registration tutor as 'fit to practise' enables the trainee to register with the GPhC, provided they are also successful at the GPhC registration assessment (General Pharmaceutical Council, 2019d).

This assessment consists of a summative written examination which includes topics such as clinical therapeutics, calculations and law (General Pharmaceutical Council, 2011). In 2019, the national average pass rate was 72%. University College London graduates achieved an average pass rate of 93% and Central Lancashire graduates achieved an average pass rate of 47% (Andalo, 2019).Hence, the pass rates for the assessment vary widely. Some of the reasons why pass rates vary so widely may include: the university the candidate attended, the sector the training programme was completed in and the A-level grades achieved.

Passing the registration assessment enables a pharmacist to practise in any sector: community, hospital, industry, primary care, irrespective of whether the pharmacist has any previous experience working in that sector (Jee, Schafheutle and Noyce, 2019). Pre-registration training is, in the majority of cases, a single-sector training programme; hence a pharmacist could complete their pre-registration training in community pharmacy and proceed to work as a hospital pharmacist (Jee, Schafheutle and Noyce, 2016). As

such, the performance standards which pre-registration pharmacists need produce evidence in support of having met during their training year are generic and achievable across different sectors. See Figure 1.

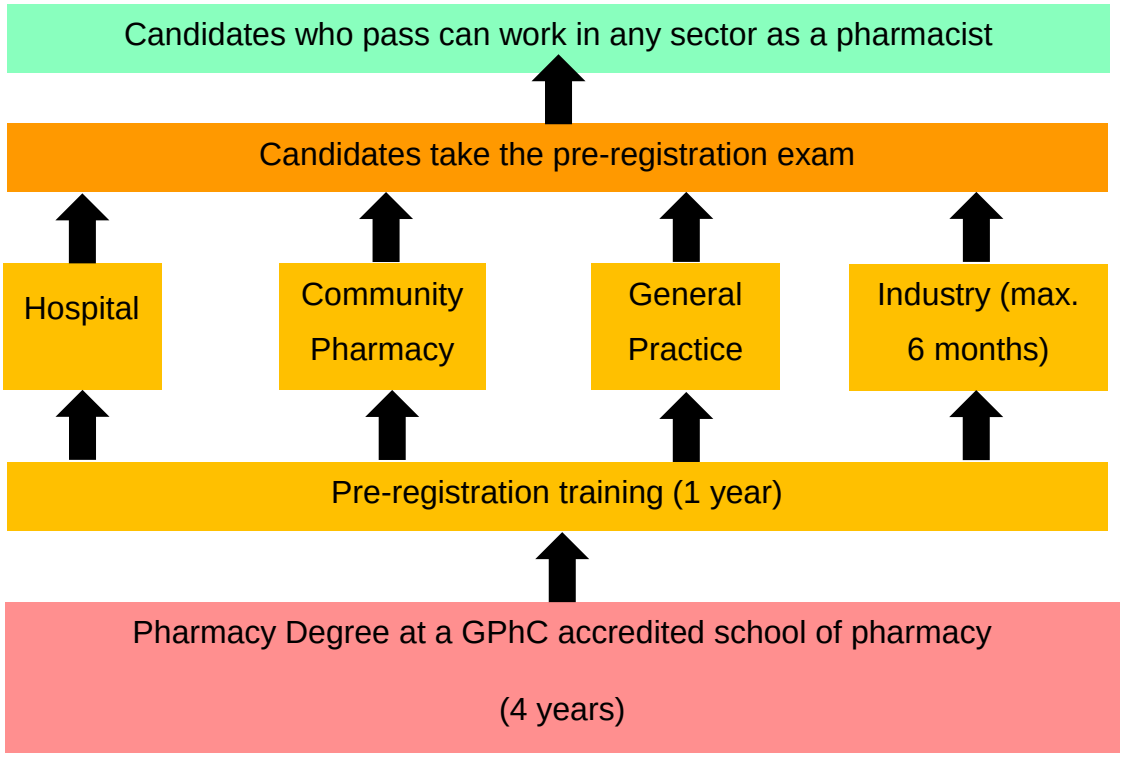

Figure 1: Summary of pharmacy education in the UK

1.3.1 MPharm (4 years)

Thirty-one universities in the UK offer an accredited four-year pharmacy degree (MPharm), with a further university holding provisional registration (General Pharmaceutical Council, 2020a). The MPharm curriculum often follows a spiral design with content, both scientific and practice-related, introduced in the early years and revisited in increasing complexity in the later years (Harden and Stamper, 1999; General Pharmaceutical Council, 2011). The course remains largely theory-based and incorporates little practice-based teaching or assessment (Taylor and Harding, 2007; Jee, Schafheutle and Noyce, 2016). However, more practice-based training is being incorporated, as experiential placements are now a mandatory component of the MPharm (General Pharmaceutical Council, 2011). Experiential placements are set hours/days where students attend a

workplace (often related to the relevant field of practice) in order to learn from their experiences. The GPhC does not provide any guidance or regulation on the amount of hours students should spend undertaking experiential placements within the MPharm. Hence, there is significant variability in quantity of experiential placements between universities; ranging from 54 to 496 total hours per student across the four years (Jacob and Boyter, 2020). In addition, whether universities choose to incorporate experiential placements as part of a module with credits attached is determined by each individual university. Similarly, whether placement sites are paid and the sector(s) placements are held in, also varies between universities (Jacob and Boyter, 2020). These experiential placements, whilst recognised as a valuable learning experience, do not better prepare students for pre-registration training as the opportunities to interact with healthcare professionals and work as part of a team in this time period is very limited (Taylor and Harding, 2007; Guile and Ahamed, 2011; Bullen, Davison and Hardisty, 2019).

1.3.2 MPharm (5 years)

Two universities in England offer five-year pharmacy degrees that incorporate pre-registration training as two 6-month placements and a further four are provisionally accredited (General Pharmaceutical Council, 2020a). These universities secure the 6-month placements for their students and are held jointly responsible with the pre-registration training provider for trainee ‘sign-off’ prior to sitting the registration assessment (Bullen, Davison and Hardisty, 2019). One university also offers a five-year degree that involves the students intercalating, hence the university does not share responsibility with the training provider for final sign-off (General Pharmaceutical Council, 2020a).

In addition to accrediting these programmes, the GPhC determines the education standards that all universities offering an MPharm degree and all pre-registration training providers must adhere to (General Pharmaceutical Council, 2011). The GPhC does not stipulate *how* these standards may be

met; each school of pharmacy and each pre-registration training provider determines this individually.

In January 2019, the GPhC launched a consultation to explore aligning the education standards for the 4-year MPharm degree plus the 12-month pre-registration training. This combined approach for the initial education of pharmacists aims to create an education pathway which better links academic study to practical experience (General Pharmaceutical Council, 2019b). It has been reported that students' lack of practice-based experience may affect their ability to apply knowledge in their professional practice (Taylor and Harding, 2007; Husband, Todd and Fulton, 2014; Thomas, 2017). Hence, it is important that academic study and practical experience are linked. The GPhC does not intend to instruct universities and workplace training providers *how* these education standards need to be met, or *how* academic and practical experience should be linked; this will continue to be determined by individual organisations (General Pharmaceutical Council, 2019b).

The GPhC have considered that a five-year degree, inclusive of workplace training, will enable more consistency and accountability with respect to the quality of workplace training provided (General Pharmaceutical Council, 2019b). This will move the pharmacy degree in line with other healthcare professional degrees such as medicine and nursing, which both incorporate extended placements in different workplaces as a part of the courses (University of East Anglia, 2019b, 2019a).

1.3.3 MPharm in the Republic of Ireland, Scotland and Wales

A five-year pharmacy degree, with placements integrated into the curriculum, was introduced in the Republic of Ireland in 2015 (The Pharmaceutical Society of Ireland, 2019). In this model, students undertake 6-weeks of shadow placements in their second year, 6-months of placements in their third-fourth year and 8-months of placement in their fifth year, across different workplace providers and different sectors of practice (The Pharmaceutical Society of Ireland, 2014). However, with no additional funding provided to deliver this five-year integrated degree, the approach

taken closely resembles the five-year degrees in England, where the workplace experience has been largely spread across the final two years of training. The students receive no salary for their placements and must pay an additional year of tuition fees to the university for their fifth year. Students completing this degree have raised reports of increased anxiety, mental ill health and financial worries. In addition, the roles undertaken during these placements are more akin to that of a pharmacy technician, rather than a learner who is training to be a pharmacist (O'Connor, 2016).

In Scotland, a five-year integrated pharmacy degree will commence in 2020-2021 and will include experiential placements as part of the degree. A new funding model will be introduced to support the additional costs associated with experiential learning (NHS Education for Scotland, 2018).

In Wales, multi-sector pre-registration pharmacist training is being rolled out so that by 2023, all training posts will include a minimum of 4-weeks in each of the following sectors of practice; hospital, community and primary care (Health Education and Improvement Wales (HEIW), 2020).

1.3.4 Funding model

The MPharm degree in England is funded as a science degree and so receives £1,500 per student per year of funding from the Office for Students. In contrast, the funding allocated per medical/dentistry student per year is £10,000 (Office for Students, 2019). As a result, schools of pharmacy do not have the necessary resources to:

- Employ staff to deal with the administrative burden associated with organising experiential placements.
- Reimburse workplaces for training students.
- Train educational supervisors.

This lack of resource has likely contributed to the variations in the quantity and quality of experiential training offered at different schools of pharmacy (General Pharmaceutical Council, 2014; Jacob and Boyter, 2020).

The categorisation of pharmacy as a science degree has also affected which students are recruited to the pharmacy course, which is largely determined by academic performance alone, as interviews are not mandatory (Burns, 2018). This contrasts other healthcare professional courses that recruit students based on their ability to demonstrate values akin to the NHS such as; working together for patients, compassion, respect and dignity (Department of Health, 2015; Health Education England, 2016).

1.3.5 International pharmacy education

Globally, pharmacy schools continue to expand and introduce experiential placements as an integral part of the university curriculum. In the United States of America (USA), the Accreditation Council for Pharmacy Education (ACPE) has included experiential placements as part of its accreditation criteria for the 4-year professional pharmacy postgraduate degree (PharmD). Admission to study for a PharmD normally requires completion of a minimum of two years of general undergraduate study. In the first two years of the PharmD, students are required to complete a structured and sequenced experiential programme called Introductory Pharmacy Practice Experience (IPPE). This requires a minimum 300 hours of placement experience. Later in the course (third and fourth year) students must complete their Advanced Pharmacy Practice Experience (APPE), consisting of a minimum of 36 weeks (1440 hours) of placement in at least four mandatory settings; community pharmacy, general practice, hospital pharmacy and inpatient general medicine (Accreditation Council for Pharmacy Education, 2015).

Whilst these mandatory placements provide a specified set amount of placement experience and more so than most pharmacy education courses globally, one opinion piece reports that the quantity of placements does not necessarily equal quality of learning (Cox, 2016). Through increasing the experiential focus of pharmacy training in the USA, concerns have been raised around the knowledge of pharmacists in topics such as medicinal chemistry and pharmaceutics (Skau, 2007). It has been argued in the USA and the UK that the introduction of experiential placements into a pharmacy degree must not come at the expense of necessary and important scientific

knowledge (Skau, 2007; The Pharmaceutical Journal, 2019). Pharmacists have a tendency towards wanting to establish scientific knowledge prior to application of this knowledge in a professional setting. There appears to be the underlying belief within the profession that 'science' comes first and the 'professional' comes second. However, the development of the professional is just as important as the development of the scientist and professional development should be developed at all stages of the pharmacy curriculum (Taylor and Harding, 2007).

The Australian Pharmacy Council stipulates that Schools of Pharmacy must incorporate an experiential placement programme as part of their course, but no minimum number of hours for placements is specified (Australian Pharmacy Council, 2017). At one university, pharmacy students must spend 500 hours (12-13 weeks) of their 4-year degree undertaking experiential placements. Pharmacists who supervise these students on these placements are 'volunteer preceptors' as they receive no training, there are no formal feedback processes and no financial reimbursement for accepting students for placements (Lucas *et al.*, 2018).

1.3.6 Pre-registration tutors

In order to become a pre-registration tutor in the UK, a GPhC registered pharmacist needs only to satisfy the following criteria:

- Practising for at least three years in the sector of pharmacy they wish to become a tutor in.
- Satisfy assessment requirements (if they are subject to a GPhC investigation).

(General Pharmaceutical Council, 2018).

Tutors receive no mandatory formal training, undergo no formal review process, do not need to meet any minimum standards and are not regulated in any way by the GPhC (Mills, Blenkinsopp and Black, 2013; General Pharmaceutical Council, 2018). The GPhC provides resources for tutoring, but some tutors have found these inadequate in preparing pharmacists for

their tutoring role (Jee, Schafheutle and Noyce, 2016; Davison, Bullen and Ling, 2019).

Tutors often receive no formal recognition for their role from their employer i.e. the tutor role does not form a part of their job description, they receive no financial benefits for tutoring and employers are not obligated to allocate dedicated tutoring time for the pharmacist (Mills, Blenkinsopp and Black, 2013; Jee, Schafheutle and Noyce, 2016; Davison, Bullen and Ling, 2019).

It is becoming increasingly argued that systems of performance management and quality assurance should be introduced for pre-registration tutors and that their roles as supervisor, coach and assessor are not appropriate (Mills, Blenkinsopp and Black, 2013; Safdar, 2015; Jee, Schafheutle and Noyce, 2019).

The roles and functions of pre-registration tutors also differ according to the sector of practice. In hospital pharmacy, the pre-registration tutor maintains oversight but will be one of a number of pharmacists supervising the trainee throughout their year (Jee, Schafheutle and Noyce, 2016). In community pharmacy, the pre-registration tutor may be the only pharmacist in the pharmacy, hence the only pharmacist who is responsible for supervising the trainee.

The pre-registration pharmacist tutoring model is distinctly different to that defined by the Nursing and Midwifery Council (NMC). In nursing, different individuals undertake the roles of practice supervisor, practice assessor and academic assessor (The Association for Perioperative Practice, 2018). Any registered nurse should be in a position to support nursing students to learn in the practice environment, in the capacity of a practice supervisor (Nursing and Midwifery Council, 2018c). Practice assessors are responsible for determining a student's learning for their placement and will have relevant knowledge and experience appropriate to the programme outcomes they are assessing (Nursing and Midwifery Council, 2018b). Academic assessors monitor and judge students' academic achievements during their nursing course. They work alongside the practice assessors to make

recommendations for progression to the next stage of the nursing course (Nursing and Midwifery Council, 2019).

Foundation doctor training in the UK is a 2-year programme whereby foundation year (FY) doctors rotate through a variety of medical and surgical specialties within a hospital or collection of hospitals every 3-4 months. FY doctors have an educational supervisor, clinical supervisor and academic supervisor. The educational supervisor maintains overall responsibility for their training and a clinical supervisor is responsible for supervising the FY doctor's educational progress during their rotation. Different individuals who receive specific training for their role must demonstrate they are competent in providing feedback and carrying out assessments to undertake these roles. The academic supervisor is responsible for overseeing and providing feedback on academic work (UK Foundation Programme, 2019).

1.3.7 Hospital pre-registration pharmacist training

Given the critical role the pre-registration year plays in the development of pharmacists as healthcare professionals, relatively little is known about how it succeeds or fails to equip trainees for their future practice as pharmacists (Jee, Schafheutle and Noyce, 2016). The hospital pharmacy pre-registration training programme is determined individually by each pre-registration manager/tutor at each hospital with little regulation from the GPhC (Jee, Schafheutle and Noyce, 2019). Approval as a pre-registration training site is granted by the GPhC on the evidence provided on an application form; site visits are only carried out if a problem is raised with the GPhC (Mills, Blenkinsopp and Black, 2013). Consequently, there is no 'standard' approach to training, but the model followed by most NHS hospitals involves trainees completing a series of 'rotational blocks' in different areas such as the dispensary, medicines information, the wards and technical services (Beswick and Bollington, 2003; Jee, Schafheutle and Noyce, 2016).

During these rotational blocks, different members of the pharmacy team are assigned a pre-registration pharmacist, whom they are responsible for supervising for the duration of that rotation. These rotational block supervisors may not have received any training or be aware that they are

expected to supervise and train pre-registration pharmacists in their relevant clinical/technical area. Given that pre-registration tutors do not routinely receive any form of training for their role, it is unlikely that these supervising members of the pharmacy team are trained to support pre-registration pharmacists to learn and develop during their rotation.

Pre-registration pharmacists have reported receiving little/no feedback from ward supervisors during their ward rotations. Any feedback which was obtained often related to a trainee's failure to meet GPhC performance standard(s) and rarely consisted of positive messages (Jee, Schafheutle and Noyce, 2019). Pre-registration tutors may be unaware how their tutees are progressing through their various rotations, relying upon the assessment from colleagues

"I've not actually been witness to what he's [pre-registration pharmacist] been doing on the wards. But, again, we have had evidence that he is doing that on the wards because that's been signed off by another pharmacist." (Tutor 11, hospital – district general, round 3)" (Jee, Schafheutle and Noyce, 2019)

By comparison, block rotational models of training for medical professionals were commonplace a decade or more ago, but are slowly being phased out. The medical block rotational training model was underpinned by a series of assumptions regarding student's development of clinical competency, namely:

1. Frequent rotations expose students to more specialties, thus providing more opportunities to learn.
2. Frequent rotations enable doctors to learn how to adapt to the different practices, understanding and developing skills to cope with the different environments.
3. Frequent rotations promote autonomy and develop independence as trainees have to find their identity on their own in these different environments (Holmboe, Ginsburg and Bernabeo, 2011).

Medical educators sought to understand the value of these assumptions by exploring learning in the workplace from a sociological perspective.

Sociological research found that trainees learnt new behaviours as a result of attaining membership in the field within which they were practising. It was hypothesised that rotating medical students, every 2-4 weeks, through different clinical areas and with different clinical teams may result in a delayed or prohibited ability of the student to acquire professional socialisation (Holmboe, Ginsburg and Bernabeo, 2011).

Factors associated with students rotating frequently were reported: difficulties understanding the roles and responsibilities in each new environment, difficulties learning how to adjust to the new clinical culture and contending with frequent changes in staff and settings. Educators directing these rotational programmes identified students struggled with:

- Their roles and responsibilities.
- Displaying clinical skills.
- Applying their knowledge.
- Participating in self-directed learning.
- Adjusting to the different environments they were working within (O'Brien, Cooke and Irby, 2007).

Furthermore, moving training environments every 2-4 weeks, reinforced a transient model of relationship building with their supervising doctor, the multi-disciplinary team and patients. It did not provide opportunities for the students to engage in caring for patients in a more holistic manner (Holmboe, Ginsburg and Bernabeo, 2011). Rather, clinical training programmes should be designed to support trainees to develop inter-professional relationships and work as a part of the clinical team, which will diminish the 'trainee as a tourist' role (Holmboe, Ginsburg and Bernabeo, 2011).

Hospital pre-registration pharmacist rotational block training often consists of rotations lasting 1-3 weeks. It is possible that some of the transition issues faced by medical students from rotating frequently, are also faced by pre-registration pharmacists. Indeed, pre-registration pharmacists have found it difficult to undergo 'professional socialisation' during training, resulting in them being socially unprepared for the workplace and lacking the necessary interpersonal and communication skills (Taylor and Harding, 2007; Langley

and Aheer, 2010). Employers report that pre-registration pharmacists lack the necessary communication and time-management skills, the ability to undertake ethical decision making and are unable to work effectively in a multi-professional team, particularly with medics (Guile and Ahamed, 2011).

1.4 Longitudinal placements

The quality of learning experiences for medical students enrolled in programmes which incorporate block rotational models of training, has raised concerns over the opportunities students have to develop good working relationships with staff and the negative impact this has on patient care (Bernabeo *et al.*, 2011). As a result, longitudinal placements (or longitudinal integrated clerkships) are becoming increasingly popular as the chosen arrangement in which medical students can experience learning in the workplace (Hirsh *et al.*, 2007; Walters *et al.*, 2012; Thistlethwaite *et al.*, 2013).

Longitudinal placements is a broad term used to describe placements that enable students to:

1. Provide care for patients over time.
2. Build relationships with the clinicians looking after these patients.
3. Achieve the learning objectives necessary for their course through these experiences (Poncelet and Hirsh, 2016).

Several reviews exploring the literature surrounding longitudinal placements, have been undertaken (Walters *et al.*, 2012; Thistlethwaite *et al.*, 2013; Gheihman *et al.*, 2018). Two of these reviews only included studies which had consisted of longitudinal placements lasting for at least 6-months, yet no rationale was provided as to why this cut-off was applied (Walters *et al.*, 2012; Gheihman *et al.*, 2018). This may imply that the views of the medical education community are persuaded towards longitudinal placements lasting a minimum of 6 months (Thistlethwaite *et al.*, 2013).

However in their review, Thistlethwaite *et al.*, (2013)., included studies which were a minimum of 13-weeks in length. Their rationale for including studies which were a minimum of 13-weeks in length, was that traditional short block

rotations typically only last for 8-weeks. Hence, any placement that was upwards of 13-weeks long, had continuity of patient care, mentorship, and involved trainees actively participating, was identified as a longitudinal placement, for the purposes of the review.

The length, format, timing within the curriculum and clinical environments of placements included in all the reviews varied widely. Hence, the length of time, format or clinical setting of a longitudinal placement is not rigidly defined. Longitudinal placements can:

- Range from 13-54 weeks.
- Consist of just a few hours every week, to part-time, to full-time.
- Take place from the first year to the final year of medical education.
- Take place in primary or secondary care, across different specialties (Walters *et al.*, 2012; Thistlethwaite *et al.*, 2013; Poncelet and Hirsh, 2016).

It appears that whilst there is no universally accepted format for a longitudinal placement, if a placement is able to offer students opportunities to: care for patients over time, build relationships with staff, achieve the required learning objectives and is a minimum of at least 13-weeks long, it can be considered to be a longitudinal placement (Thistlethwaite *et al.*, 2013; Poncelet and Hirsh, 2016).

Continuity appears to be the key component to the longitudinal placement. Hence, whilst the length, format and clinical settings of longitudinal placements may be different to one another, so long as continuity of care, the clinical team and learning objectives are maintained, there is the potential for numerous benefits to be derived from longitudinal placements over traditional short block rotations. These benefits for medical students include:

- Assuming greater responsibility for patient care as trust develops (Walters *et al.*, 2011).
- Developing an identity grounded in caring (Konkin and Suddards, 2012).

- Possessing a better outlook on multidisciplinary practice compared to students who had not undertaken a longitudinal placement (Florence *et al.*, 2007).
- Improved mentorship (Bell *et al.*, 2008).
- Obtaining more feedback on performance (Bell *et al.*, 2008) (O'Donoghue, McGrath and Cullen, 2015).
- Improved confidence (Bell *et al.*, 2008; Zink *et al.*, 2008; Wamsley *et al.*, 2009; O'Donoghue, McGrath and Cullen, 2015).
- The opportunity to experience and provide continuity of care for patients (O'Donoghue, McGrath and Cullen, 2015).
- Feeling 'useful' (Walters *et al.*, 2011; O'Donoghue, McGrath and Cullen, 2015).
- Became 'novice' members of the profession (Walters *et al.*, 2011).
- Individualised training (Zink *et al.*, 2008).
- Acquiring knowledge relevant to the students' future practice (Zink *et al.*, 2008; Wamsley *et al.*, 2009).
- Enhanced professionalism (O'Brien *et al.*, 2012).
- Greater patient-centeredness (Walters *et al.*, 2012; O'Donoghue, McGrath and Cullen, 2015).
- Development of clinical skills, team-working skills (Zink *et al.*, 2008) (Wamsley *et al.*, 2009).
- Development of problem-solving skills (O'Donoghue, McGrath and Cullen, 2015).
- Building a patient-centred approach to care (Ogur *et al.*, 2007; Hirsh *et al.*, 2012).
- Progression into independent practice (O'Brien *et al.*, 2012).

Increasingly, there is becoming a compelling argument for using longitudinal placements instead of short block rotations in medical education (Thistlethwaite *et al.*, 2013). Currently, no such argument exists for pharmacy education. However, as the role of the pharmacist continues to become more patient-centred, a training model which rotates hospital pre-registration pharmacists every 1-3 weeks may no longer be appropriate, given the clinical settings which hospital pharmacists now practise within and the

expectations for their developed role (Lord Carter of Coles, 2016). Longitudinal placements as part of hospital pre-registration pharmacist training may therefore warrant further investigation as a potential viable alternative to traditional block rotational models.

1.5 Research study

This research sought to explore the concept of introducing a ward placement into the hospital pre-registration year. If this was acceptable to stakeholders, it could be designed, implemented and evaluated. Funding for the study was provided by two NHS hospitals and the East of England pre-registration pharmacist training programme. The two hospitals also provided many of the stakeholders involved in this research and are referred to throughout this thesis as hospital 1 and hospital 2.

In order to explore, design, implement and evaluate a ward placement for hospital pre-registration pharmacists, a research approach with a focus on learning theories, designing interventions, implementation methods and evaluative research methods was required. The next chapter focuses on the use of the design-based research approach as the basis through which research into this ward placement could be undertaken.

Chapter 2 Design-based research

2.1 Introduction

Chapter 1 provided an overview of the UK government agenda for the pharmacy profession, hospital pharmacy and pharmacy education. It also explored pre-registration tutor responsibilities and current models of hospital pre-registration pharmacist training. The pitfalls of block rotational placements for medical students were described and evidence was presented in support of longitudinal 13-week placements. This chapter describes the rationale behind the approach taken by the researcher (HK) in order to design, implement and evaluate a ward placement for hospital pre-registration pharmacists.

2.2 Philosophical position

The philosophical position of a researcher reveals the underlying assumptions they are making about their work. This enables the reader to understand the perspective of the researcher and relate this to the methods and findings presented in the research. If researchers fail to acknowledge the affect that their underlying assumptions can have on the research, then it can compromise the integrity of the research and its' findings (Scotland, 2012).

The most common philosophical positions (or worldviews), postpositivism and social constructivism, provide different perspectives on the meaning of reality and truth. Postpositivism describes how there is not one single reality, but that reality is subjective according to different persons. Social constructivism (also known as interpretivism) describes how researchers interpret the meaning behind participants' experiences of the world. These worldviews promote understanding of social research through:

- Ontology - study of being/reality.
- Epistemology - how can I know reality/knowledge.
- Methodology - what processes we use to attain knowledge (Crotty, 1998; Morgan, 2014; Creswell and Poth, 2017b).

The philosophical position, pragmatism, has recently emerged from the above philosophical approaches for understanding truth and reality (Morgan,

2014). Pragmatism promotes a practical approach to research, starting with the question of ‘what works?’ (Hall, 2013; Morgan, 2014; R. Johnson and Christensen, 2014b; Creswell and Poth, 2017b).

The pragmatist researcher aims to achieve a strong evidence base for which practices are effective at answering their research question(s) and produce change in the environment (Barab and Squire, 2004; R. Johnson and Christensen, 2014a).

The pragmatic approach encourages researchers’ freedom to utilise whichever methodology and methods are necessary to answer their research question(s) (Morgan, 2014; R. B. Johnson and Christensen, 2014). However, this does not mean that researchers can adopt an ‘anything goes’ approach to selecting research methods (Denscombe, 2008). Rather, pragmatist researchers must describe and explain why they have chosen the methods they have chosen to answer their research question(s) (Morgan, 2014; R. Johnson and Christensen, 2014a).

In this study, the researcher adopted a pragmatic philosophical approach to conducting the research. This led the researcher to explore, using the design-based research approach, how to design, implement and evaluate a ward placement for hospital pre-registration pharmacists (Barab and Squire, 2004; McKenney and Reeves, 2018a).

2.3 Design-based research

Design-based research is not a methodology or a method, it is an approach that can be used to support an inquiry, particularly in the field of education. Design-based research is also known as educational design research (McKenney and Reeves, 2020). In this thesis, the terminology ‘design-based research’ is used to describe the approach taken. Readers should be aware that this also infers the educational design research approach.

The design-based research (DBR) approach evolved from design experiments. Design experiments were first used to study learning in the classroom, as the need to study learning in the ‘real context’ arose (Brown, 1992; Collins, Joseph and Bielaczyz, 2004). This research identified that a

systematic approach for conducting design experiments needed to be developed and that practitioners would need to be involved (Collins, 1992).

2.3.1 Purpose

DBR seeks to improve practice through providing an opportunity for researchers and practitioners to design interventions and evaluate them, thus solving complex educational challenges and advancing knowledge concurrently (Wang and Hannafin, 2005; Anderson and Shattuck, 2012; Van den Akker *et al.*, 2013; Getenet, 2019). DBR provides a structure for conducting research that allows complex educational challenges to be addressed using an iterative approach (McKenney and Reeves, 2012f).

2.3.2 Practitioner involvement

Practitioner involvement is one of the key elements of the DBR approach, as this enables practitioner participants to be viewed as ‘co-participants’ in the design of the intervention, rather than as subjects whom the intervention is carried out on (Barab and Squire, 2004). This collaboration requires effort on the part of both researchers and practitioners to bring about a cultural change in the way each party operates in the workplace and academia (Dolmans and Tigelaar, 2012; McKenney and Reeves, 2012a).

The involvement of practitioners enhances the likelihood of securing an intervention which is then implemented successfully in practice (Plomp and Voogt, 2009). Therefore, the engagement and commitment of practitioners in the DBR process is key (Kelly, 2006; Walker, 2006).

2.3.3 Theory

The other central characteristic of the DBR approach is the use of theory to both inform the design of the intervention and the research methods employed to evaluate the intervention (Barab and Squire, 2004; Collins, Joseph and Bielaczyz, 2004; McKenney and Reeves, 2012a).

The use of theory enables research findings to better influence educational practice in other settings through the development of a conceptual

framework, thus improving the transferability of the design intervention (Cobb *et al.*, 2003; Barab and Squire, 2004; McKenney, Nieveen and Van den Akker, 2006). Methods which fail to incorporate theory into the design affects the ability of research findings to inform practice in other contexts (Wang and Hannafin, 2005).

Using theory in the DBR approach also enables research findings to contribute to the theoretical knowledge as the theory is refined and further developed (Barab and Squire, 2004). This also makes DBR distinct from other methodologies such as service evaluation research or participatory action research, since neither of these advocate using theory to inform intervention or evaluation design (Barab and Squire, 2004; Dolmans and Tigelaar, 2012).

The contribution to existing theoretical knowledge and/or the creation of new theories using the DBR approach may be achieved through the development of theoretical frameworks or local instruction theories, that may allow others to identify how learning can be supported in their context (Gravemeijer and Cobb, 2006; Loljekvist *et al.*, 2016; Wolcott *et al.*, 2019).

2.3.4 Characteristics

In addition to the use of practitioners and theory to inform intervention and research design, there are additional characteristics of DBR listed in brief below:

1. Collaborative: engages key stakeholders at all stages.
2. Theoretically focused: learning theories are used to facilitate design and results contribute to body of knowledge on learning theories.
3. Authentic: research takes place in the natural context.
4. Iterative: the design follows a cyclical process whereby designs are revisited and improved upon and learning theories are refined.
5. Methodologically diverse: a range of methods are used throughout and these are selected based on what is most appropriate for each study.

6. Practical: the intervention is tailored to benefit the learners, but not at a cost to the natural context where the research is taking place.
7. Operational: the education intervention is properly understood and can therefore be applied in other settings.
8. Contextually aware: researchers are aware of the variables that exist within the study (and their potential influence) but there is no attempt to control for these variables
   (Barab and Squire, 2004; Collins, Joseph and Bielaczyz, 2004; Wang and Hannafin, 2005; Dolmans and Tigelaar, 2012; McKenney and Reeves, 2012a; Wolcott *et al.*, 2019).

These combined characteristics make DBR a unique approach to improving educational research to better inform practice (Wolcott *et al.*, 2019).

2.3.5 Model

The DBR approach requires the research to be undertaken in the 'real context' and not in a completely controlled environment because what happens in the real context is an essential part of the process (Barab and Squire, 2004).

The approach involves a series of studies undertaken in the real context that are iterative in nature. Therefore, each study informs the design of the subsequent and the intervention design is refined and improved upon throughout (Cobb *et al.*, 2003; Barab and Squire, 2004; Dolmans and Tigelaar, 2012). This allows the intervention and research design to remain flexible and open to change, which is often how things operate in practice (Barab and Squire, 2004). This approach to intervention design and development creates a cycle of continuous improvement (Kelly, 2006; Dolmans and Tigelaar, 2012; McKenney and Reeves, 2012f).

DBR often begins with a problem which needs a creative solution; one which is developed over time using multiple stakeholder practitioners, a literature review and discussions with the research team (McKenney, Nieveen and Van den Akker, 2006; McKenney and Reeves, 2012a). The practitioners have the opportunity to give feedback and continue to develop the

intervention through the various iterative stages of the DBR approach. This empowers them to see how research can be used to influence their practice (Plomp and Voogt, 2009).

The methods used in each study should be different, since the aims of the research at each stage will be distinct (Dolmans and Tigelaar, 2012). Hence, the researcher may need to employ different methods of data collection and analysis throughout the project in order to achieve a change in practice and contribute to the body of knowledge on learning theory (Cobb *et al.*, 2003; Wang and Hannafin, 2005).

McKenney and Reeves (2018)., identify a process of inquiry that can be used to support the design, implementation and evaluation of interventions to both inform theoretical understanding and bring about a change in practice (McKenney and Reeves, 2012f). DBR consists of three core phases:

- Exploration/analysis
- Design/construction
- Evaluation/reflection

(McKenney and Reeves, 2012f).

During the exploration/analysis phase, a literature review is undertaken, key stakeholders are identified and data gathered on their views and practice context (McKenney and Reeves, 2012b).

The design/construction phase is where the design intervention is built, which is grounded in both theory and reality. Often the design will need to go through several iterative cycles before being finalised. This phase does not involve empirical data collection as such, but requires involvement from key stakeholders to support the refinement of the design (McKenney and Reeves, 2012d).

The evaluation/reflection phase involves the formal evaluation of the design intervention for the purposes of generating data to inform outputs for the next iterative version of the design (McKenney and Reeves, 2012e). The phase in which the intervention is being implemented will inform the evaluation strategy. The evaluation strategies are categorised into three stages:

- Alpha testing, exploring soundness and feasibility.
- Beta testing, determining local viability and institutionalisation.
- Gamma testing, identifying effectiveness and impact (McKenney and Reeves, 2018d).

The evaluation strategy will be determined by the stage of implementation. For example, the first time an intervention is implemented, alpha testing would be conducted. Once the intervention has been implemented several times across multiple settings, the focus of the evaluation will gradually shift from alpha, to beta, to gamma testing (McKenney and Reeves, 2018d).

During each phase, the researcher will utilise theoretical and practical elements of the approach. Figure 2 shows how these phases interact with one another. The bidirectional arrows indicate that all the phases are linked to one another (McKenney and Reeves, 2012f).

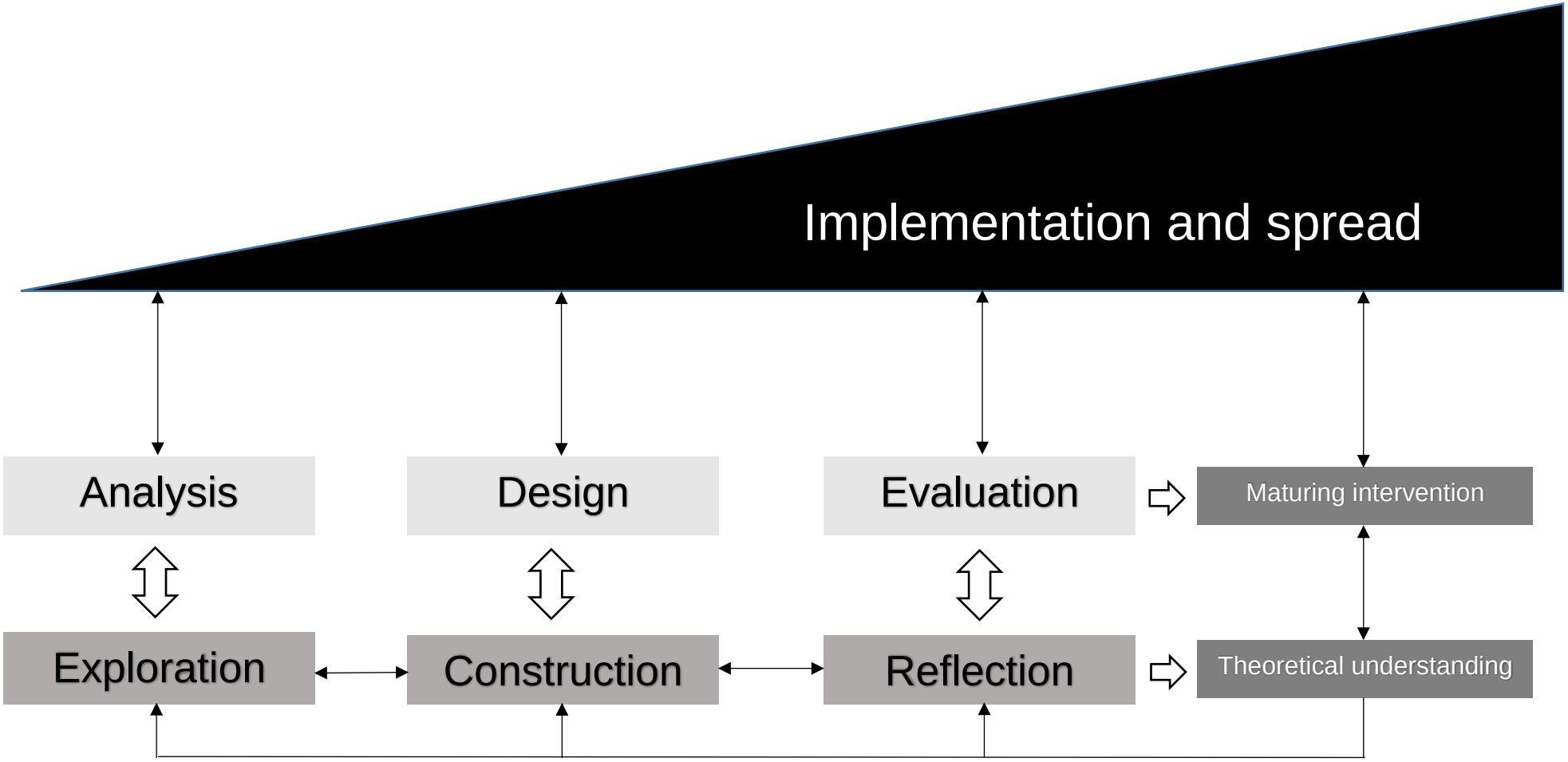

Figure 2: Design-based research model (adapted from (McKenney and Reeves, 2012f))

2.3.6 Limitations

DBR is time-consuming, risky and complicated to carry out. Over the course of the research project, participants may leave employment and both the setting and design may need to change. This reflects authentic practice but a constantly changing research design is fragile (Dolmans and Tigelaar, 2012).

DBR also requires the researcher to take on additional roles such as designer, advisor and facilitator in order to implement the study (Barab and Kirshner, 2001; Cobb *et al.*, 2003; Plomp, 2007; Dolmans and Tigelaar, 2012).

In addition, the researcher may need build a relationship with the stakeholders and participants in the study, which could result in participants being unwilling to criticise the intervention design. This could imply that the intervention works, despite a possible lack of evidence (Dolmans and Tigelaar, 2012).

2.3.7 Role of the researcher

The researcher's relationship with the participants may also compromise the researcher's ability to critically evaluate the research findings (Dolmans and Tigelaar, 2012). This may lead to the independence of the researcher being questioned and their research findings challenged due to the nature of their additional roles of designer, advisor and facilitator (Barab and Squire, 2004; Plomp, 2007). Therefore, the researcher must become adaptable, taking on these additional roles without compromising their ultimate role as a researcher.

The researcher must remain flexible and be prepared to alter the intervention design if required and also ensure the study is not influenced (positively or negatively) by the stakeholders involved (Plomp, 2007). Thus, the researcher will need to have effective organisational and communication skills as well as a clear understanding of the research processes to enable them to support the participants and stakeholders to remain objective throughout (McKenney, Nieveen and Van den Akker, 2006: 84).

In addition, it is important to understand how the researcher's attributes and background may have shaped their thinking with respect to the research, as this may influence the study (O'Leary, 2004b; Creswell and Poth, 2017d). Attributes such as the researcher's gender, age, accent, ethnicity, professional role, social status and education experience may have contributed to how participants responded to them over the course of the research (Yardley, 2000; O'Leary, 2004b). These factors are important when one considers the position of power and influence of the researcher, particularly when the researcher is also the designer, facilitator and advisor (O'Leary, 2004b; Plomp, 2007).

Characteristics such as the researcher's age, gender, accent and ethnicity are fixed. These may or may not have influenced the participants in this research during data collection. It is not possible to determine whether or how these did affect the data collected. Hence, these characteristics of the researcher (HK) will not be discussed further.

The researcher's professional role, social status and education experience are more likely to have influenced the data obtained. In order that the reader may interpret the results in light of this information, it has been included below (Bunniss and Kelly, 2010).

The researcher (HK) is a qualified pharmacist, having completed her MPharm degree at the University of Nottingham and her pre-registration training at a district general hospital in Dorset. The researcher worked for one year as a rotational hospital pharmacist at the same Trust she completed her pre-registration training at, before commencing her PhD. During this study, the researcher practised as a pharmacist at a local hospital on some Saturdays and occasionally during the working week but never at any hospitals involved in this research study. The researcher has previous experience conducting qualitative research (Kinsey *et al.*, 2016) but has never worked as a pre-registration tutor or had any prior role in the education and training of pharmacy professionals. Since the researcher was a pharmacist, had trained and worked in a hospital setting, this may have affected the way participants responded to her during data collection. Her

previous experience may also have put her at risk of interpreting the data in the context of her own experiences, rather than that of the participants recruited to this research.

Consequently, the researcher needed to be aware of her own background, assumptions and ideas in order to be able to be as objective as possible (for it is impossible in any research to be entirely objective) (O'Leary, 2004b; Creswell and Poth, 2017d). Practising 'reflexivity' (a term used to describe one's ability to describe their own feelings, emotions and motives and how these may be influencing the research) is important to enable a researcher to be as objective as possible when collecting data. This allows the researcher to remain accountable to their thoughts and assumptions regarding the data, reducing their influence over the participants (O'Leary, 2004b; Bunniss and Kelly, 2010; Ormston *et al.*, 2014). Below is a reflexive account of the researcher's perspective of the research topic.

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Prior to commencing the research, I was very sceptical about the concept of introducing a ward placement for hospital pre-registration pharmacists. Despite the evidence presented in the medical education literature, I struggled to rationalise how an extended ward placement could provide greater access to learning opportunities for pre-registration pharmacists. Frequently, I reflected on my own rotational pre-registration experience, which I enjoyed and would not have changed looking back. I approached the research with scepticism and doubt.

Throughout this research, the researcher (HK) had to detach herself from her own experiences as a pre-registration pharmacist and hospital pharmacist to enable her to be objective about the research. To support this process, the researcher kept a reflexive diary and discussed the data collection at regular meetings with the supervisory team. The researcher also sought out the support of the social learning theory group at the University of Manchester.

The readers of this thesis may not concur with some of the interpretations made by the researcher, but understanding the researcher's background

may help to mitigate the conclusions reached and help determine whether these findings are transferable to other settings (Holliday, 2007).

2.3.8 The research team

The research team consisted of the main researcher Hannah Kinsey (HK) and the PhD supervisory team; David Wright (DW), Jeremy Sokhi (JS) and Maria Christou (MC).

The local collaborators consisted of the two chief pharmacists of the NHS hospitals part-funding this research.

2.4 Qualitative research

Qualitative research methods are often used in DBR studies, particularly at the initial stages because of the rich data needed to inform intervention design and evaluation (Barab and Squire, 2004).

Qualitative research methods identify a research question or problem and seek to explore the meaning behind the question through collecting data from people in a natural, real-life setting. Analysis of this data produces patterns or themes which are interpreted by the researcher to contribute to the field under study (Creswell and Poth, 2017a).

Qualitative research methods should be used when a comprehensive understanding of the research problem is needed which can only be determined through talking to people, giving them the opportunity to voice their experiences, views and perspectives on the research matter. The researcher is a central part of the research process as they gather data through talking to people, for example in focus groups or interviews (Creswell and Poth, 2017a).

Data collected using qualitative methods builds a better understanding of the research context, facilitating a richer interpretation of results to identify new theoretical constructs. This contributes to a better understanding of the research area (Creswell and Poth, 2017a).

2.5 Validation

Validity is an essential part of the DBR approach, as readers must be able to trust that the results are correctly interpreted and the data supports the claims made. Hence, designers and researchers must present enough information at each stage of the research process to enable readers to carry out critical evaluation (Obrenović, 2011; Van den Akker, 2013).

Judging the quality of DBR can be difficult, as the approach is at risk of sampling bias, response bias, researcher bias and amassing large quantities of data that cannot be harnessed to answer the research question(s) (Brown, 1992; Kelly, 2006). However, the iterative nature of DBR studies can be used to build validity and trustworthiness into the research (Kennedy-Clark, 2013).

Since all the studies in this research adopted a qualitative approach, the criteria for determining validity in qualitative research studies will be utilised. Validation in qualitative research seeks to establish the accuracy of results, through exploring the processes used by the research methods, to determine if sufficient measures were put in place to ensure validity of findings (Creswell and Poth, 2017c).

Nine validation strategies are described, which recommend that researchers should employ at least two strategies in each qualitative research study to confirm validation of results. These nine validation strategies are presented through three lenses; the researcher's lens, the participant's lens and the reader's lens (Creswell and Poth, 2017c).

Researcher's lens

- Triangulation.
- Disconfirming evidence.
- Reflexivity.

Participant's lens

- Member checking or seeking participant feedback.
- Prolonged engagement in the field.

- Collaborating with participants.

Reader's lens

- External audits.
- Generating thick rich descriptions.
- Peer review of the data.
  (Creswell and Poth, 2017c).

Researcher's lens

Triangulation describes collecting and analysing data from multiple sources, allowing the research phenomenon to be explored from multiple perspectives, thus increasing the credibility of the findings (Lincoln and Guba, 1985; Mukhalalati, 2016; Creswell and Poth, 2017c; Amin *et al.*, 2020). Often, DBR studies will incorporate several participants and a range of data collection methods, hence triangulation of the data becomes a natural part of the research design (McKenney, Nieveen and Van den Akker, 2006).

Disconfirming evidence involves the reporting of data that does not fit the pattern or theme of other data findings. This demonstrates the researcher is reporting the real results, since not all evidence acquired in a real life setting will be identical, some of it will be different (Creswell and Poth, 2017c). Presenting data that contradicts other findings, theory or literature, allows the researcher to explore why these data exist. This enhances the interpretation of the data and reinforces trustworthiness (Amin *et al.*, 2020).

Reflexivity describes the researcher's role and their background, enabling the reader to better understand the perspectives and interpretations the researcher has made regarding the data (Creswell and Poth, 2017c).

Participant's lens

Member checking involves participants viewing and commenting on the researcher's interpretations of the data to determine the credibility of the findings (Lincoln and Guba, 1985; Creswell and Poth, 2017c). By giving participants the opportunity to review the data collected and/or the researcher's interpretations enables them to clarify outstanding points,

correct any errors and provide any additional context or background where necessary (Lincoln and Guba, 1985). However, even if participants disagree with researcher's interpretations of the data, they may choose not to tell the researcher, out of fear they could be seen as 'impolite' (Lincoln and Guba, 1985).

Prolonged engagement in the field of research allows the researcher to build a relationship with participants and gatekeepers. This relationship permits the researcher to double check for any misinformation which may have crept into the study but requires close long-term contact with participants to carry out (Lincoln and Guba, 1985; Creswell and Poth, 2017c). Prolonged engagement may also result in participants wanting to 'please' the researcher with their answers to interview questions. However, the researcher's extended time in the field should enable them to recognise their own influence on the participants and the research context in order to account for this phenomena (Lincoln and Guba, 1985).

Collaborating with participants describes how the researcher involved participants throughout the research process from design, to implementation and analysis of results. Participant involvement in the research will vary but studies which utilise participants more heavily will often be better supported and the findings will be used to inform future practice (Patton, 2015; Creswell and Poth, 2017c).

Reader or reviewer's lens

External audits involve a person not connected to the study examining the research methods, results and interpretations to assess whether the conclusions are supported by the data (Lincoln and Guba, 1985; Creswell and Poth, 2017c). In DBR, splitting the research into different phases can help establish whether conclusions are supported by the data, since the results from a previous phase inform the research design for the subsequent phase (Kennedy-Clark, 2013).

Generating a thick rich description helps to confer transferability of research findings to other settings because the detail enables readers to draw inferences about whether the research context and research findings would

be applicable to their setting (Lincoln and Guba, 1985; Creswell and Poth, 2017c).

Qualitative studies in pharmacy that focus on barriers and facilitators of an intervention in a specific context may not contain enough description to enable readers to infer whether these results are applicable to their context. Therefore, researchers should seek to provide enough rich description of the data to lead to meaningful findings that can be interpreted by others (Amin *et al.*, 2020).

Peer review or debriefing with another member of the research team provides additional rigour. The peer debriefer is described as a 'devil's advocate' who probes the lead researcher about their study findings, interpretations and asks difficult questions about the data (Lincoln and Guba, 1985; Creswell and Poth, 2017c)

For each of the studies conducted as part of this research, the reader must make an assessment as to whether they are confident that the studies meet at least two of the validation criteria listed above, which will determine the validity of the results presented.

2.6 Generalisability

Generalisability of results describes the ability of research findings from one study to have applicability to another similar research population (McKenney and Reeves, 2012a). In DBR, the approach taken intends to understand what has happened and why it has happened in one context and provide guidance to others undertaking the same, or similar work in another context (Barab and Squire, 2004).

Generalisability is enhanced when the researcher can demonstrate that the education intervention can be replicated successfully across multiple organisations (McKenney and Reeves, 2012a). As a result of this replication, it will become clearer which theoretical findings and which aspects of the education intervention are applicable across organisations and which ones are not (McKenney and Reeves, 2012a). Therefore, DBR studies that involve

implementing education interventions in multiple settings, will elicit results more generalisable to other contexts.

Thus, generalisability of results using the DBR approach involves readers taking the theoretical contributions and guidance of the practical intervention and applying it to their own settings (Brown, 1992; Dolmans and Tigelaar, 2012; McKenney and Reeves, 2012a).

Determining generalisability of DBR findings often consists of two steps. In the first instance, the researcher must describe the characteristics of the intervention, the context in which it was applied and the resulting theoretical insights. Following this, any subsequent consumer of the design intervention must transfer and translate the education intervention to their context using the information provided by the researcher (McKenney and Reeves, 2012a). Ultimately, it is the individual readers who will have to make inferences regarding the generalisability of results, based on the information provided, to assess whether the research findings have applicability in their setting(s) (Brown, 1992; McKenney, Nieveen and Van den Akker, 2006; Dolmans and Tigelaar, 2012; McKenney and Reeves, 2012f).

2.7 Thesis structure

Introducing a ward placement for hospital pre-registration pharmacists requires a redesign of the learning environment in order to accommodate a new learner onto the hospital ward. DBR approaches have been used successfully in previous studies to redesign the work-based learning environment utilising practitioner involvement and have been recommended for redesigning pharmacy education (Getenet, 2019; Wolcott *et al.*, 2019).

The application of DBR principles in this research first requires a thorough understanding of learning theories and their relevance to pre-registration pharmacist education and training. The next chapter describes the theoretical constructs underpinning this research and their applicability to pharmacy education and training.

The structure of this thesis has been organised in accordance with the different phases of DBR. Table 1 presents the phases of the DBR process and which project they linked to.

Table 1: Phases of design-based research

DBR phase	Purpose
Analysis and exploration	Chapter 4: Establish the views of key stakeholders regarding the introduction of a ward placement for pre-registration pharmacists
Design and construction	Chapter 5: Design and construction of a ward placement
Prototype implementation and evaluation	Chapter 6: Evaluation of a prototype ward placement for a pre-registration pharmacist
Longitudinal placement implementation and evaluation	Chapter 7: Evaluation of the 13-week longitudinal ward placement for pre-registration pharmacists
Maturing intervention, theoretical understanding, implementation and spread	Chapter 8: Discussion and dissemination of research findings

Chapter 3 Theory

3.1 Introduction

In chapter 2, design-based research (DBR) was presented as the chosen approach for this research, which aims to develop a ward placement as part of an alternative model for hospital pre-registration pharmacist training. The DBR approach requires an understanding of learning theories in order to effectively design and analyse study findings (Barab and Squire, 2004; Torre *et al.*, 2006). Learning theories enable researchers to better understand the research context and can inform the design of education interventions (McKenney and Reeves, 2012c; Wolcott *et al.*, 2019).

This chapter explains four learning theories and applies their principles to pharmacist education and training. The theories being explored include: experiential learning, situated learning, communities of practice and landscapes of practice. Each of these theories builds upon the principles of the previous and represent an evolution of thought on learning in social settings, such as the workplace.

'Experiential learning' theory, emphasises the importance of gathering and reflecting on experience, to support learning (Kolb, 1984).

'Situated learning' theory, describes the importance of the learning environment. It focuses on the role of the mentor providing opportunities for learning (Lave and Wenger, 1991).

'Communities of Practice' explains the role of the wider community in providing access to learning opportunities (Wenger, 1998).

'Landscapes of practice' describes the process of moving between different communities of practice and building an identity (Wenger-Trayner *et al.*, 2014).

3.1.1 Reflexivity

The researcher's (HK) reflexive account regarding the use of learning theories within this research:

March 2018

When I came to realise that I needed to understand and apply learning theories as part of this research, I was initially confused. I was not a sociologist and could not understand why an appreciation of learning theories was an important part of the DBR approach. Initially, I struggled to identify learning theories that were helpful and found myself getting frustrated with the vast expanse of literature relating to learning theories. It was whilst reading a thesis, which had used communities of practice learning theory, that I came across the social learning theory course at the University of Manchester. I enrolled onto the course and as a result, was able to understand how learning theories could better enhance my understanding of the research context. The course helped me determine which learning theories to incorporate as part of this research and how to think more like a researcher, as I learnt how to apply each learning theory in the context of pharmacy education.

3.2 Experiential learning

Experiential learning describes how learners move through a 'learning cycle' as they acquire experience (Kolb, 1984). Each time a learning cycle is completed and a new one begins, the assumption is that learning occurs at a higher level than before (Kolb, 1984; Poore, Cullen and Schaar, 2014). In order to achieve the best possible learning from their experience, the individual must move through each of the four phases of the learning cycle:

1. Concrete experience – the learner will participate in the activity e.g. a pre-registration pharmacist taking a medication history from a patient.
2. Reflective observation – the learner reflects on this experience e.g. a pre-registration pharmacist writing a reflective piece of evidence for their portfolio.
3. Abstract conceptualisation - the learner considers the importance of the experience, discussing their experience with others and considers what could have been done differently to improve their performance e.g. a pre-registration pharmacist discusses their experience with their pre-registration tutor.

4. Active experimentation – the learner using what was learned to inform their future practice e.g. a pre-registration pharmacist practising their introduction to patient consultations with their tutor ((Kolb, 1984).

In order to illustrate this learning cycle, Figure 3 outlines these four phases.

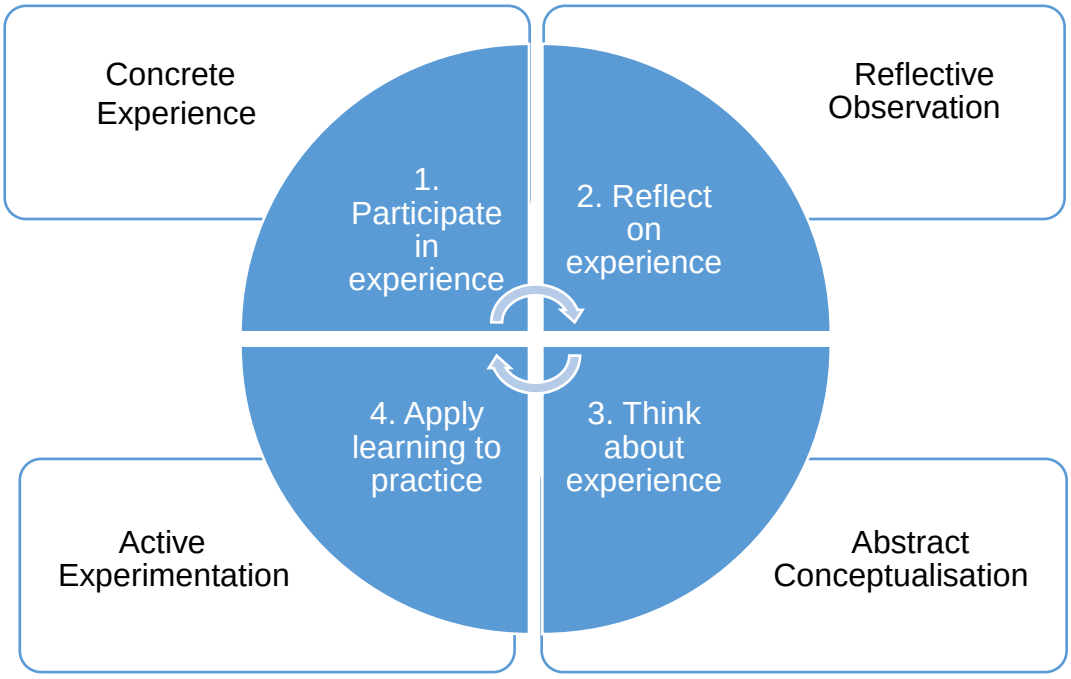

Figure 3: Experiential Learning Cycle by Kolb (Kolb, 1984)

Different people may prefer to learn in a particular phase(s) of the learning cycle and this inclination is referred to as someone's preferred 'learning style'. A person's individual learning style may be influenced by their personality or choice of career. People can shift and adapt their preferred learning style as they move into new careers or take on new roles. It is proposed that nine different combinations of learning style exist (Kolb, 1984; Joy and Kolb, 2009). Whilst a person may prefer to learn in one stage of the learning cycle over another, there is a lack of evidence to support teaching people according to their preferred learning style (Coffield *et al.*, 2004; Massa and Mayer, 2006; Pashler *et al.*, 2008).

Regardless of which phase of the learning cycle people prefer to learn in, the importance of acquiring experience to support learning is essential for healthcare professionals' training (Mann, 2011; Yardley, Teunissen and

Dornan, 2012). An estimated 80% of practitioners' knowledge is acquired from learning in the workplace. Therefore, experiential placements as part of medical education support students to derive knowledge and meaning from these real-life experiences (Yardley, Teunissen and Dornan, 2012; Dornan *et al.*, 2019).

The quantity, length and nature of experiential placements in the pharmacy degree varies between universities (Jacob and Boyter, 2020). Some students will, have acquired experience from working in pharmacy as a counter assistant, dispenser or technician. The value of these experiences should not be dismissed, but is must be acknowledged that the student's role here focused on providing a service to patients, not on learning. Students are not expected to meet learning outcomes, generate evidence or formally reflect on their experiences. This is distinctly different to experiential placements that are integral to a formal curriculum, whereby a student is supernumerary. The student should learn from their experiences through meeting learning outcomes, generating evidence, acquiring competencies and formally reflecting. Therefore, whilst working in pharmacy will support some learning, it is not a substitute for an organised experiential placement that places the student's learning at the centre.

The GPhC has recently begun to recommend the inclusion of more experiential placements during the degree (Mantzourani and Hughes, 2015; General Pharmaceutical Council, 2019a). However, short experiential placements for pharmacy students does not always result in learning which enhances a pharmacy students' preparedness for practice (Jee, Schafheutle and Noyce, 2019). Consequently, experience for the sake of experience doesn't necessarily result in learning, if placements are not designed and implemented effectively. Without sufficient funding for experiential placements within the pharmacy degree, it will not be feasible for universities to reimburse workplaces or train supervising pharmacists.

Therefore, currently, pre-registration pharmacist training remains the first substantive and formal learning opportunity for most pharmacist trainees to: acquire experience on a continuous basis, participate in an organised

training programme, meet learning objectives and generate evidence from reflecting on their experiences (Schafheutle *et al.*, 2012, 2013; Jee, Schafheutle and Noyce, 2016, 2019). As such, the environment within which pre-registration pharmacist training takes place is vital for learning and development. Situated learning theory describes the importance of the environment and the social context for the acquisition of experiences that can lead to learning (Mann, 2011).

3.3 Situated learning

Situated learning theory describes how learning is embedded within a social context (environment), where an apprentice learns from more experienced individuals. Thus, the social responsibility for learning is shared between an apprentice and master. In order for an apprentice to learn effectively from their master, they must be adopted into the community of more experienced individuals (Lave and Wenger, 1991). Lave and Wenger (1991: 98)., define a community of practice in situated learning theory as:

> *"a set of relations among persons, activity, and world, over time and in relation with other tangential and overlapping communities of practice"*

Lave and Wenger (1991)., describe how, when the apprentice joins the community of practice, they will initially exist at the periphery of the community. If the apprentice is to be successful as a learner, they must transition from the periphery to the centre of the community of practice. The master will need to support the apprentice to make this transition and it will take time for this to happen. This transition from peripheral to full member over time occurs through a process called 'legitimate peripheral participation' (LPP).

LPP describes how apprentices (or newcomers to a community) are supported to learn and develop through interacting with already established members in the community of practice. Established members are responsible for providing opportunities for newcomers to learn in their community (Lave and Wenger, 1991; Spouse, 1998). The more time a newcomer spends in a community of practice, the more opportunities they

will have to interact with established members, learn effectively and acquire more responsibilities that will help them acquire full membership (Lave and Wenger, 1991).

LPP is both the means to support newcomers to become full participants in a community of practice but also the mechanism by which they can be excluded if they are denied opportunities to participate in meaningful practice (Lave and Wenger, 1991; Handley, Sturdy and Fincham, 2006). This has been observed in communities, such as the meat-cutters, where apprentices were used as a form of cheap labour and denied opportunities to take part in more sophisticated levels of practice (Lave and Wenger, 1991; Handley, Sturdy and Fincham, 2006). Menial activities that marginalise newcomers make it difficult to obtain full membership (Lave and Wenger, 1991).

Currently, there has been little research to explore whether hospital pharmacy departments operate as communities of practice (Difrancesco, 2011). Nonetheless, if for a moment it were to be assumed that hospital pharmacy departments have the *potential to behave* as a community of practice, then situated learning can be applied to hospital pharmacist pre-registration training programmes. The pre-registration tutor (master) is responsible for supporting the pre-registration pharmacist (apprentice) to transition through legitimate peripheral participation to participate in the full membership in a *pharmacy community of practice*. The pre-registration pharmacist interacts with established members of the pharmacy community of practice and acquires more responsibilities for independent practice.

It is important that newcomers to a community of practice are given enough time to learn through LPP. Student nurses found it more difficult to acquire responsibilities, contextualise experiences and participate in meaningful practice during short placements and this affected their ability to learn (Cope, Cuthbertson and Stoddart, 2000). As such, it is important to note that simply by being present in the environment where experience in the ‘real-life’ setting is provided, does not necessarily result in effective learning (Cope, Cuthbertson and Stoddart, 2000). Therefore, whilst experiential learning theory emphasises the importance of experience with regards to learning,

situated learning theory highlights the need for the context of the experience to be appropriately developed, stressing the role of tutors (masters), and established members to enable newcomers to transition effectively through a community of practice during a placement.

This has implications for the way hospital pre-registration pharmacist training is structured, which is predominantly pharmacy department-based and comprised of short block rotations in different technical and clinical areas. Situated learning theory suggests that exposing pre-registration pharmacists to a range of environments to provide opportunities for 'experiential learning' may not afford trainees enough time to undergo legitimate peripheral participation. Nursing students found that in order for their learning to be effective they needed to earn the trust of established members in the community of practice through participating authentically in professional practice and being socially accepted – both of which take time (Cope, Cuthbertson and Stoddart, 2000).

Hospital pre-registration pharmacists have reported that they do not have enough responsibilities during their training (Jee, Schafheutle and Noyce, 2016); suggesting that they have not experienced legitimate peripheral participation, which may have affected their ability to learn. During hospital pre-registration training, trainees rotate through different clinical/technical areas with different pharmacists and/or technicians. These individuals have an important role in supporting the pre-registration pharmacist to legitimately participate in the practice of the pharmacy team. However, these pharmacists/technicians may not have the time or skills to support the pre-registration pharmacists to legitimately participate in their clinical/technical area during the short block rotation.

The pre-registration manager/tutor organises short block rotational pre-registration programmes and reviews the evidence pre-registration pharmacists generate from these experiences. Pre-registration tutors have a role to play in supporting supervising pharmacists/technicians and developing training programmes that support pre-registration pharmacists to legitimately participate in activities. Yet, pre-registration tutors receive:

- Little/no education and training, on learning theories, designing training programmes, providing feedback on performance, managing trainees in difficulty.
- No formal recognition for their tutoring role in a job description, career progression or additional pay/remuneration.
- Insufficient time to support the participation of pre-registration pharmacists to be legitimised (Mills, Blenkinsopp and Black, 2013; Jee, Schafheutle and Noyce, 2016; Davison, Bullen and Ling, 2019).

Consequently, tutors may be ill-equipped for supporting pre-registration pharmacists to learn from their experiences through legitimate peripheral participation. The application of situated learning theory to pre-registration training reveals the importance of supervising pharmacists and pre-registration tutors in supporting pre-registration pharmacists to learn from their experiences.

Communities of practice learning theory better describes the social interactions amongst members of a community of practice. The theory identifies the features of a community of practice that enable it to become a supportive learning environment.

3.4 Communities of practice

Communities of Practice theory draws attention to the social practises of communities where learning is taking place. What constitutes a community of practice evolved from situated learning theory, and was redefined in communities of practice theory as:

"a group of people who share a concern or a passion for something they do, and learn how to do it better as they interact regularly"

(Wenger-Trayner and Wenger-Trayner, 2018)

Communities of practice theory highlights that not all groups of people working together will collectively form a community of practice, but that those which do, will provide better social environments for learning to take place in.

Identifying whether a group of individuals has formed a community of practice may be done through exploring whether they display the following practices:

1. Joint enterprise – members are all working towards the same common cause, seeking to achieve the same thing.
2. Shared repertoire - members use the same tools and resources, stories and routines to be able to achieve their common cause.
3. Mutual engagement – members are willing to work together, share knowledge with one another and develop healthy working relationships (Wenger, 1998).

Joint enterprise

Joint enterprise describes the common goal to which all members of the community of practice are working towards and their accountability to one another for achieving this goal. This sense of accountability develops as members learn what acceptable/unacceptable behaviour is and negotiate this practice within the community. The drive towards achieving the joint enterprise directs the social energy and motivation of members to work in the community to realise this (Wenger, 1998).

Shared repertoire

Over time, the joint pursuit of enterprise creates a repertoire of resources and knowledge which members share and can include specific activities, guidance, tools, routines and abbreviations. These are things which the community has adopted over the course of its existence and which have become part of its practice (Wenger, 1998).

Mutual Engagement

Mutual engagement between members of the community enables good working relationships to be established, which, when sustained over time, allows participants to become more central members of the community. The community of practice may not always need to be a peaceful and harmonious place for it to function effectively; conflict may also help to develop the practice of a community (Wenger, 1998).

Indicators for the presence of a community of practice

In addition to these individual interactions that take place between members of a community of practice, there are a further 14 indicators that could be used to identify a community of practice, see table 2.

Table 2: Indicators for the presence of a community of practice and proposed domain, reproduced from (Li *et al.*, 2009a).

Indicator	CoP domains
Sustained mutual relationships – harmonious or conflictual	Mutual engagement
Shared ways of engaging in doing things together	Mutual engagement Joint enterprise
The rapid flow of information and propagation of innovation	Mutual engagement
Absence of introductory preambles, as if conversations and interactions were merely the continuation of an ongoing process	Mutual engagement Shared repertoire
Very quick setup of a problem to be discussed	Mutual engagement Shared repertoire
Substantial overlap in participants' descriptions of who belongs	Mutual engagement
Knowing what others know, what they can do and how they can contribute to an enterprise	Mutual engagement Shared repertoire Joint enterprise
Mutually defining identities	Shared repertoire
The ability to assess the appropriateness of actions and products	Shared repertoire
Specific tools, representations and other artefacts	Shared repertoire
Local lore, shared stories, inside jokes, knowing laughter	Shared repertoire
Jargon and shortcuts to communication as well as the ease of producing new ones	Mutual engagement Shared repertoire
Certain styles recognised as displaying membership	Mutual engagement
A shared discourse reflecting a certain perspective on the world	Mutual engagement

These indicators may be useful for determining the extent to which a group of people operate effectively as a community of practice, but their abstract nature makes them difficult to apply (Li *et al.*, 2009a). In a systematic review of the literature, four characteristics indicative that a community of practice had formed amongst a group of individuals were identified. These are:

1. Social interaction (individuals interacting with one another).
2. Knowledge-sharing (knowledge is relevant).
3. Knowledge-creation (new ways of 'doing things').
4. Identity-building (building a professional identity).

(Li *et al.*, 2009b)

However, not all characteristics were consistently present in every community of practice included in the review, suggesting that the ability of a group of individuals to effectively function as a community of practice may vary (Li *et al.*, 2009b; Terry *et al.*, 2020).

3.4.1 Communities of practice in healthcare

Communities of practice have been used in the different ways within the healthcare setting to improve practice through the sharing and creating of new of knowledge amongst healthcare professionals (Li *et al.*, 2009b; Ranmuthugala *et al.*, 2011; Terry *et al.*, 2020). The sharing of knowledge is particularly important for trainee and novice healthcare professionals, since they will need to acquire knowledge and skills in order to transition from the periphery of a community to the centre (Terry *et al.*, 2020). Inherently, communities of practice can promote interprofessional working in the healthcare setting if an experienced leader is willing and able to demonstrate this (Oulet *et al.*, 2009).

The Nursing and Midwifery Council (NMC) state that at least 2300 hours (of the 4600 hours) of student nurse clinical training should involve the student working as part of a team dedicated to providing care for patients (Nursing and Midwifery Council, 2018a).

Terry et al. (2020)., identified a series of enablers and barriers to building a successful community of practice that supports student and novice nurses

(also referred to as newcomers) to develop in the healthcare setting. The enablers include:

1) Environment – newcomers feel comfortable, are able to participate and are familiar with ward staff (Jørgensen and Hadders, 2015).
2) Support from community members – members are willing to help the newcomers in their role and make an effort to include them in social and professional conversations (Thrysoe *et al.*, 2012; Walsh, 2015).
3) Welcome, acceptance and belonging – the newcomers were expected by the members, were welcomed on arrival and were given responsibilities to facilitate their learning (Ranse and Grealish, 2007; Jørgensen and Hadders, 2015).

The newcomers needed to be able to build trust with their mentor so having a mentor who was approachable, patient, friendly and supportive was important for sustaining the learning environment (Lewis and Kelly, 2018).

The barriers to creating a community of practice that supported student and novice nurses to develop were:

1) Alienation – when newcomers felt overlooked, unwelcomed or treated with indifference which affected their ability to contribute (Ranse and Grealish, 2007; Thrysoe *et al.*, 2010; Jørgensen and Hadders, 2015).
2) Marginalisation – newcomers were given token access to the community of practice but were denied full participatory rights, they were not accepted professionally by the core members and could not contribute fully (Thrysoe *et al.*, 2012).
3) Frustrations – when newcomers did not know what to do, or who to ask or were frustrated by their own lack of knowledge or competence, not being viewed as supernumerary (Thrysoe *et al.*, 2012; Jørgensen and Hadders, 2015).

Hospital wards have been identified and described as operating as communities of practice, but the role of the pharmacist within these ward communities of practice remains undefined and unidentified in the literature. Traditionally, hospital pharmacists have been primarily located within

pharmacy departments, only visiting wards to carry out medicines-related activities. This could account for the absence of the role of the pharmacist from the community of practice literature exploring the hospital ward. However, pharmacists are now required to undertake more patient-facing roles, which will, in the majority of cases, take place on the hospital ward (Lord Carter of Coles, 2016). Therefore, in order to understand the role of the pharmacist both within the pharmacy department and on the hospital ward, landscapes of practice must be explored.

3.5 Landscapes of practice

Landscapes of practice describe how individuals can belong to more than one community of practice at any one time and often are either peripheral or full members of several (Handley, Sturdy and Fincham, 2006). Each community of practice will look different, with unique practices, enterprises, ways of working and sharing knowledge (Handley, Sturdy and Fincham, 2006). Since each community of practice will be unique, this results in the creation of boundaries around communities of practice (Wenger, 1999 p.103). These multiple communities of practice, with their respective boundaries are called a 'landscape of practice' (Wenger-Trayner et al., 2014 p.13).

It is not possible to participate competently in every community of practice in a given landscape. But, having an awareness and knowledge of how other communities of practice function, can enable a person to navigate their personal landscape of practice effectively (Wenger-Trayner and Wenger-Trayner, 2014).

In a hospital, numerous professional staff groups are organised according to speciality. There is the potential for many different communities of practice to exist, thus creating a landscape of practice within the hospital. The boundaries between these different communities of practice may be obvious, such as membership in a profession, whilst others may be subtle, such as groups of individuals within a department or on a ward (Wenger, 1999 p.103).

Crossing the boundary from one community of practice into another can be difficult, as boundaries into other communities can be confusing places where members use jargon to communicate or share inside jokes which may alienate the non-member (Wenger-Trayner et al., 2014 p.5 p.17).

Crossing the boundary does have the potential to provide unexpected learning opportunities as non-members and members interact. They can learn to share practice and identify opportunities for working together. But, if the practice shared at the boundary encounter is seen by either side as irrelevant and unimportant, then time has been wasted as nothing has been learnt (Wenger-Trayner et al., 2014 p.17-18).

So whilst crossing boundaries between different communities of practice holds great potential for learning, it also carries the risk of wasting people's time (Wenger-Trayner et al., 2014 p.17). In order to cross a boundary into another community successfully, the person may require support from an individual known as a 'broker'. A broker is someone who can introduce and provide access to the practice of the community the person is hoping to join (Wenger, 1999 p.105).

Hospital staff may belong to their 'professional' community of practice and their 'ward/specialty area' community of practice. For example, nurses may consider themselves a member of their professional community, a 'nurses community of practice' and a member of the community on the ward which they work, 'ward 12 community of practice' (Cope, Cuthbertson and Stoddart, 2000; Wenger-Trayner *et al.*, 2014).

Landscapes of practice declare that learning involves the creation of an identity, a discovery of who one is within the landscape of practice. Therefore, how a person navigates and experiences their landscape of practice as they move through it will shape a persons' identity. Some communities of practice a person may interact with will have a lasting impact on their identity, but some will not. Some communities of practice will be ignored entirely or just visited. The journey a person takes through this landscape will shape how they determine their identity. How effective they will be in the landscape will be determined by the extent to which they embed

into each community of practice (Wenger-Trayner and Wenger-Trayner, 2014).

3.5.1 Modes of identification

In order to become a member of a community of practice, a person must build their identity across their landscape of practice so that both they and others know, in which communities of practice they are a full member.

There are three indicators, known as ‘modes of identification’, that can be used to determine the extent to which a person is a member of a community of practice. These are:

1. Engagement – engaging with the practice of the community, contributing to the conversation, using resources, discussing topics with members.
2. Imagination – building a picture of the landscape that helps a person to understand where they fit, what their role is and how they can participate.
3. Alignment – a position of agreement or alliance with the context that works in a two-way process so that people can influence others to align with them (Wenger-Trayner and Wenger-Trayner, 2014).

These modes of identification enable a person to make sense of their landscape of practice and their position within each community. These modes of identification, can also exist across boundaries between communities as well. Engagement can take place at a boundary if the community is willing to engage with the newcomer, but the newcomer may find it more difficult to participate in alignment at a boundary encounter as they won’t necessarily have an awareness of the practices and routines of the community (Wenger-Trayner and Wenger-Trayner, 2014 p.22).

The modes of identification are separate from one another and when applied together, they are most effective at helping people to identify where their practice is located across a landscape. If a person only engages with a community, they are at risk of simply accepting the ‘status quo’ and not seeking to imagine a better way of doing things or being prepared to

influence positive change over the community. Similarly, if a person only imagines how and where they could participate in a community, but does not engage in the process of doing so, they also will not be able to transition into full membership in the community of practice. Therefore, it is through combining each of these modes of identification that a person is able to determine where they are located in their landscape of practice, including their peripherality or centrality within each community of practice (Wenger-Trayner and Wenger-Trayner, 2014).

Pre-registration pharmacist training lasts for 1-year and does not guarantee employment in the same hospital once training has completed. Hence, there may be a disconnect between how much a pre-registration pharmacist may be willing to engage; since they may plan to only be there for a short time. However, the longevity of the training year, the need for tutor sign-off and the GPhC exam may well transcend any apathy or lack of willingness for pre-registration pharmacists to engage in pre-registration training.

The public expects healthcare professionals to be competent practitioners in their own field of expertise and sufficiently knowledgeable about other practices in the landscape, which are relevant to them. Competence is achieved when a practitioner is sufficiently knowledgeable and skilled at performing their role within a given community of practice. Knowledgeability is the ability to practise competently across several communities of practice (the landscape of practice). Therefore, learning to become a healthcare professional is about developing an identity of competence in relevant communities of practice and knowledgeability across a landscape of practice (Wenger-Trayner and Wenger-Trayner, 2014). Hence, pharmacists must develop competence in relevant communities of practice (e.g. ward and pharmacy department) and knowledgeability across their landscape of practice (e.g. hospital).

Learning to become an effective healthcare professional is therefore not just about obtaining ‘book knowledge’ but also about developing competence, learning how to successfully move between communities of practice and

acquiring knowledgeability about the relevant landscape(s) of practice (Wenger-Trayner and Wenger-Trayner, 2014 p.23).

3.6 Summary

This chapter has described several learning theories and applied their principles to pharmacy, medical and nursing education. The design-based research approach advocates that theory must be used to inform study design, implementation and evaluation to enable greater applicability of the research to other settings (Barab and Squire, 2004).

Experiential learning theory conceptualises the importance of experiential placements to enhance learning. Situated learning theory highlights the role of the supervising pharmacist and tutor in supporting pre-registration pharmacists to develop through legitimate peripheral participation.

Communities of practice theory explores the behaviours and attributes of a community of practice; mutual engagement, shared repertoire and joint enterprise. Landscapes of practice describes the boundaries that exist between different communities of practice and how crossing these boundaries can provide opportunities for learning. The journey that a person takes through a landscape of practice will ultimately shape their identity.

The introduction of a ward placement for pre-registration pharmacists using these social learning theories to inform design is a complex research agenda. Design-based research offers a framework within which this intervention can be explored, designed, implemented and evaluated to contribute to the knowledge of learning theory and inform the development of similar models in other settings.

Chapter 4 Analysis and Exploration

4.1 Introduction

The previous chapter described four learning theories that are relevant to pharmacy education and training:

- Experiential learning
- Situated learning
- Communities of practice
- Landscapes of practice

These theories will be applied to the results generated in this chapter, which describes the explorative work undertaken to determine current pre-registration training models and identify possible design features of a ward placement.

4.1.1 Design-based research: Analysis and exploration

The DBR approach involves first carrying out explorative work to establish the research area, such as through a literature review. This may be followed by engaging with stakeholders to determine their views on the research area. The analysis and explorative phase of design-based research allows the research area to be defined and provides the platform for the intervention design to be established (McKenney and Reeves, 2012b).

Involving stakeholders at the early stages of research is important since those who will be directly impacted by the research should have input into how it will be conducted. This in turn, creates a network of people who will shape the study and be prepared to participate in it (McKenney and Reeves, 2012b).

4.2 Aim and Objectives

Aim:

Determine current pre-registration training and pharmacist practice models in hospitals and identify possible design features for a pre-registration pharmacist ward placement.

Objectives:

1. Describe current hospital pharmacist pre-registration training models.
2. Describe current pharmacist practice on hospital wards.
3. Identify barriers and enablers to implementing a ward placement during the pre-registration year.
4. Explore views on the design of a new ward placement.

These aim and objectives were used to inform the research methods, the study design and identify stakeholders who could be approached to take part in this research (McKenney and Reeves, 2012b).

4.3 Method

4.3.1 Ethical approval

Ethical approval for this study was obtained from University of East Anglia Research and Ethics Committee (see appendix 1) and governance approval from the Health Research Authority (see appendix 2). Information that could lead to the identification of participants has been redacted from these approvals.

4.3.2 Qualitative methods

Qualitative methods are of particular value in the analysis and explorative DBR phase due to their ability to gather rich descriptions of participants views on the research topic (Barab and Squire, 2004). The most common form of qualitative data collection occurs through interviews and focus groups.

4.3.2.1 Interviews

Interviews are a discussion between the researcher and a participant. An interview conducted effectively may appear to the casual observer as an everyday conversation between two individuals, but the roles of researcher

and participant are distinct, with the interview process requiring both parties to work hard in order to answer the research questions (Yeo *et al.*, 2014).

The types of interview can vary from a structured question and answer format, where the aim is to achieve standardisation, to an unstructured format, which does not use already determined questions and is more conversational (O'Leary, 2004a). Most interviews in a research setting tend to fall somewhere in the centre in what is commonly known as a 'semi-structured' interview, whereby a series of discussion points are laid out in a topic guide. These discussion points can be covered in any order and the researcher may still ask questions of the participants which are not covered in the topic guide (O'Leary, 2004a).

The semi-structured interview enables the researcher to obtain data in order to answer their research questions, whilst also allowing opportunity for listening and responding to participants, using probing questions (O'Leary, 2004a; Brinkmann and Kvale, 2015a). However, this can create a lack of consistency if the researcher does not always ask exactly the same questions at each interview (Flick, 2014b).

Interviews enable participants to provide descriptive accounts of their experience and are a useful tool for the researcher to understand participants' individual decision-making processes and thoughts regarding the research topic (Lewis and McNaughton Nicholls, 2014; Brinkmann and Kvale, 2015a). Interviews allow individuals to share their feelings with the researcher, which they may feel unable to do in a group setting. They allow a broad range of topics to be discussed, giving the researcher the opportunity to generate rich data (Yeo *et al.*, 2014).

During an interview, the researcher builds a picture of the participant's world, learning how they make sense of their experiences and derive meaning from what is taking place. This enables the researcher to interpret and characterise their views in a way that is true to the meaning of what the participant intended (Miller and Glassner, 2016).

Generating new knowledge in the context of the interview has brought about apprehension from some researchers, who question the stability and validity of data which may not be applicable in the context of research outside of the interview i.e. in the 'real world' (Yeo *et al.*, 2014). However, choosing to reject data collected during an interview as inapplicable outside of that context may result in precedence being given to the interpretation of researchers, rather than participants (Yeo *et al.*, 2014).

Most qualitative researchers take a pragmatic view on this matter, concluding that data generated during interviews has meaning outside of the interview environment (Yeo *et al.*, 2014; Brinkmann and Kvale, 2015a; Miller and Glassner, 2016). A pragmatic view was taken in this research, recognising that the knowledge created in an interview, would have meaning outside of the interview context (Ormston *et al.*, 2014).

4.3.2.2 Focus groups

Focus groups involve the researcher facilitating a discussion amongst a group of two or more participants. Focus groups differ from interviews, since they do not always allow for the detailed exploration of participants' experiences. Instead, focus groups offer an opportunity for participants to interact and discuss the research topic (Flick, 2014a). During these discussions, participants share knowledge, generate new ideas and challenge one another's perspectives. This often leads to the creation of new concepts. Focus groups are useful when the research question requires participants to think creatively, as collectively, they refine their thinking and problem solve together (Lewis and McNaughton Nicholls, 2014). Participants may also 'interview' one another as they seek to understand their peer's perspectives. This enables the researcher to 'listen in' to the conversation, resulting in them being less influential than in an interview setting and allows for more spontaneous discussion (Finch, Lewis and Turley, 2014).

When participants in a focus group hold different roles outside of the context of the focus group, there may be a hierarchical structure in play. This may result in participants perceiving a power imbalance. Participants who

perceive themselves as having less power may be less inclined to speak out (Finch, Lewis and Turley, 2014). Therefore, in mixed role focus groups, the researcher should be aware of any power imbalances that may exist amongst participants and take appropriate remedial action.

4.3.2.3 Summary

Interviews and focus groups both gather data in ways that allow the participant to reflect, explain and clarify their experiences. This enables the researcher to interpret this data more effectively, as they have greater insight into the perspectives of the participant.

This study utilised both interviews and focus groups to generate data to answer the research aim and objectives. Focus groups were used more often as this format provided the opportunity for participants to discuss their ideas and solve problems together. Interviews were held with participants who had specific in-depth knowledge relating to learning in the workplace or where focus groups were not practical.

4.3.3 Reflexivity

Reflexivity should be accounted for by the researcher at all stages of the research process so that any potential influences can be recorded (Amin *et al.*, 2020). Here, the researcher (HK) recounts how her past experiences may have shaped her interpretation of the data.

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Prior to commencing data collection for this study, I was uncertain of how participants would respond to the idea of introducing a ward placement for pre-registration pharmacists. At this stage, I myself was still very uncertain as to how or if a ward placement could work and so was eager to hear the views of stakeholder participants. I was aware that my own pre-registration training may influence how I interpreted these results and the ensuing design of the placement and determined to take all measures necessary to ensure my own influence was as minimal as possible. Therefore, I arranged meetings with a

member of the research team (JS) in between data collection to discuss the data.

4.3.4 Study design

The study design was determined by the supervisory team and local collaborators (chief pharmacists) at the hospitals who part-funded this study. The research team and local collaborators identified stakeholder participants whose role and previous experiences could satisfy the aim and objectives for this study. These stakeholders included:

- Chief pharmacists
- Pre-registration managers
- Newly qualified pharmacists
- Hospital diploma tutors
- Multi-disciplinary team members including doctors and nurses
- Healthcare professional placement facilitators

4.3.4.1 Inclusion criteria

Convenience sampling was used to recruit potential participants from each of these stakeholder groups using the following gatekeepers:

1. Director of the pre-registration pharmacist programme in the East of England.
2. Chief pharmacist/deputy chief pharmacist at hospital 1.
3. Chief pharmacist/deputy chief pharmacist at hospital 2.
4. Director of the postgraduate pharmacist clinical diploma.
5. Professor of Pharmacy Practice at the University of East Anglia.

The research team agreed a minimum amount of prior experience in respective job roles for potential participants, in order to ensure participants had sufficient breadth of experience or recent experience of the research question. The inclusion criteria for each focus group is included below.

Chief Pharmacists:

- Employed as a chief or deputy chief pharmacist in a hospital within the region.

Pre-registration managers/tutors:

- Employed in hospital pharmacy within the region.
- Worked as a tutor for a minimum of 3 years.
- Currently tutoring a pre-registration pharmacist or managing the tutoring of pre-registration pharmacists.

Postgraduate hospital diploma tutor:

- Currently mentoring a diploma pharmacist within a hospital in the region.
- Worked as a diploma tutor for a minimum of 2 years.

Newly Qualified Pharmacist:

- Employed in a hospital pharmacy within the region.
- Qualified for fewer than 2 years.
- Conducted their pre-registration training in hospital pharmacy (this may have taken place at any hospital in the UK).

Multi-disciplinary focus groups:

- Employed at either Hospital 1 or Hospital 2.
- One of the following professionals:
    - Ward Sister.
    - Ward Nurse.
    - Senior clinical Pharmacist.
    - Ward Pharmacist.
    - Doctor of the grade FY1 – ST3.
    - Doctor of the grade ST4 – Consultant.

Healthcare professional placement facilitators:

- Participants must have knowledge pertaining to conducting clinical placements for healthcare students/professionals.

4.3.4.2 Study organisation

The pharmacist participant focus groups were conducted first, to enable the researcher to gather some initial data on the type of ward suitable for hosting the multi-disciplinary placement. This enabled the researcher to approach the gatekeepers (chief pharmacists at hospitals 1 and 2) to select a suitable ward, which may include a possible ward to host a ward placement, from which to recruit the multi-disciplinary team stakeholders to a focus group. Hence, this study was divided into phases:

Phase 1a: Focus groups with pharmacist stakeholders
Phase 1b: Focus groups with multi-disciplinary team stakeholders
Phase 2: Interviews with individuals with experience of facilitating placements for medical and allied healthcare professional students.

Phases 1 and 2 were undertaken concurrently. The data collected from phase 1a informed the researcher of the individuals who should be approached and invited to take part in the multi-disciplinary focus group in phase 1b. Please see figure 4 for clarification.

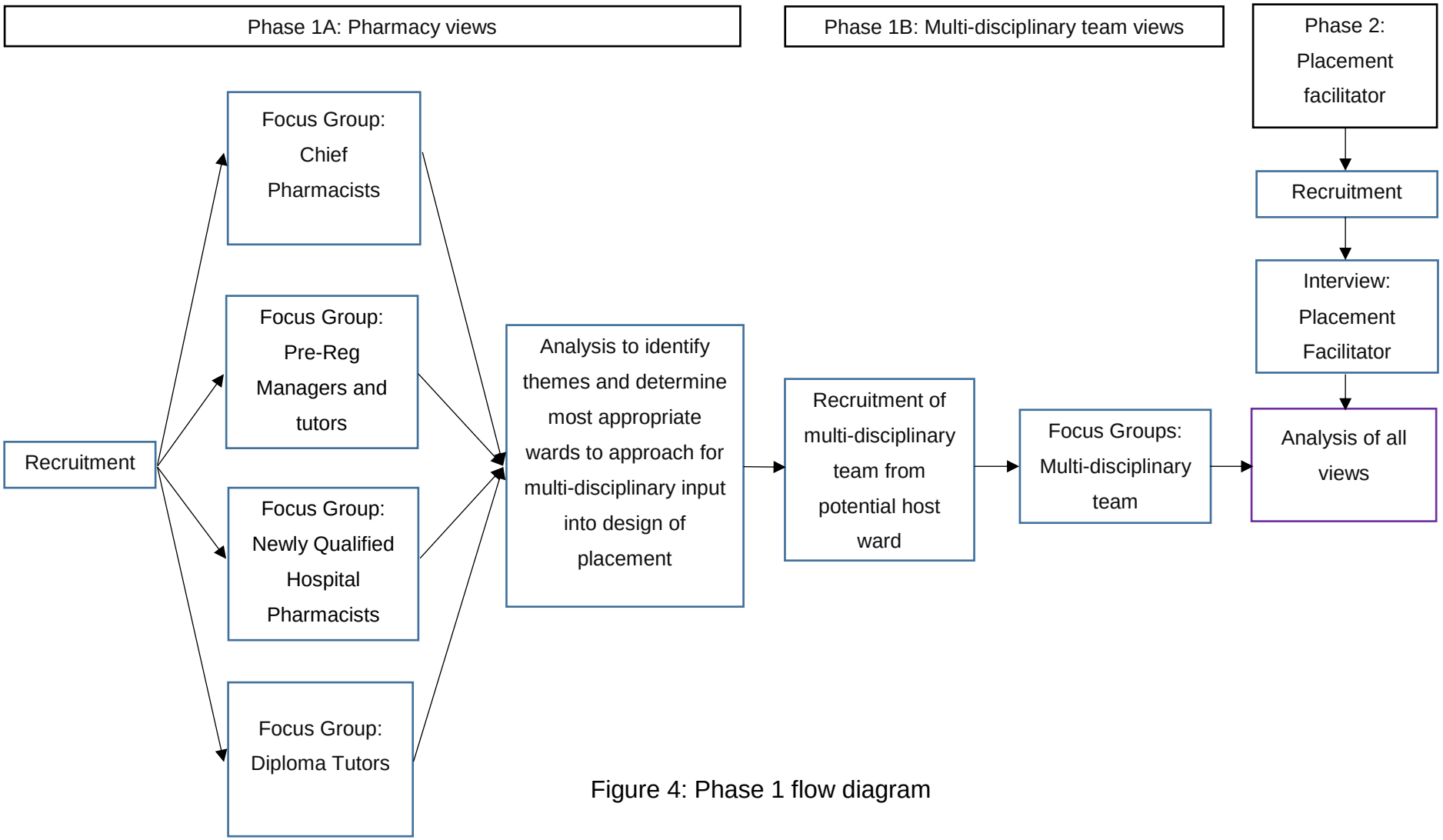

Figure 4: Phase 1 flow diagram

4.3.4.3 Recruitment

On behalf of the researcher, the gatekeepers emailed individuals meeting the inclusion criteria, participant information sheets (appendices 3-4) and consent forms at least one week prior to the focus group/interview taking place. Individuals who were interested in taking part in the research responded directly to the researcher, who arranged a suitable date/time and venue for the focus group/interview to take place. No incentives were offered to participants.

4.3.4.4 Data collection

A semi-structured topic guide was used at each focus group and interview (appendices 5 and 6). Topics for discussion included:

- Pre-registration pharmacist training.
- Hospital pharmacist working practices.
- The concept of introducing a ward placement into the pre-registration training programme.

In spite of the researcher having an awareness of the benefits of longitudinal placements in medical education, the participants were not asked by the researcher to comment on the introduction of a longitudinal placement. The participants were asked only comment on the introduction of a ward placement generally – the only reference given to the design of the ward placement was that it could be no longer than 6-months. This stipulation came from the local collaborators, who wanted this maximum timeframe applied. The rationale for this decision was based on the GPhC accrediting 6-month split pre-registration training programmes between hospital and industry at the time.

During the focus group/interview, broad open-ended questions were asked initially, followed by probing questions, to allow participants to elaborate their views (McKenney and Reeves, 2012b). Focus groups and interviews took place at the participants' workplace, in private meeting rooms and occasionally at conference venues. The researcher (HK) conducted the

focus groups accompanied by a member of the research team or colleague at the University of East Anglia (UEA) to assist with moderation. Interviews were conducted by the researcher alone. Participants had opportunities to ask the researcher any questions before the focus group/interview commenced and afterwards as well. The focus groups/ interviews were audio-recorded and written informed consent was obtained prior to recording.

Participants were made aware they were being audio-recorded for the purposes of the research and their identity would be anonymised. Participants were asked to refrain from discussing specific patient details and aspects of their working life which may not have been appropriate. No such discussions were disclosed.

Upon completion of the focus group/interview, the audio-recordings were transferred from the device to the university computer and stored in a password protected folder. Consent forms were locked in a filing cabinet in a research office with restricted access.

4.3.4.5 Data analysis

The researcher transcribed one focus group and interview. A member of administrative staff employed at the UEA transcribed subsequent focus group and interview recordings. Some researchers prefer to transcribe their own research material as it enables the researcher to become closer to the data and provide greater insight into the interview style of the researcher (Brinkmann and Kvale, 2015b). However, due to the time constraints with respect to implementing this project, it was not possible for the researcher to undertake transcription and meet the deadlines associated with this research. The researcher checked all transcriptions for accuracy.

The transcribing process preserved participant anonymity. Punctuation was added, where applicable, to the transcript and care was taken to ensure it did not alter the meaning of the sentence. The data was managed and stored using NVivo QSR International (version 11),

Inductive thematic analysis, following the six-step method was undertaken on the data (Braun and Clarke, 2006). This allowed the data to be coded and organised into groups and themes:

Step 1: Familiarisation with the data (repeated reading).

Step 2: Generate initial codes (short descriptions).

Step 3: Searching for themes (group codes to categories).

Step 4: Review themes (resort categories – seek research team support).

Step 5: Defining and naming themes (label themes).

Step 6: Produce the report (write up results).

The researcher (HK) familiarised herself with the data through the transcription and checking stage. She reflected on these results in her reflexive diary.

Initial codes were generated which were then grouped together. Gradually, over time, through continually revisiting the data, subthemes and themes emerged. There is some concern that by coding, sorting and restructuring the data in this manner, the meaning of the initial sentence or paragraph may be lost. However, this was mitigated through keeping the reflexive diary and discussions with the research team (Miles and Huberman, 1994).

The coding and theme generation was undertaken by the researcher (HK), who was supported by a member of the research team (JS), who checked the coding for accuracy. Second-checking of coding is recommended in thematic analysis. Additionally, when the designer and researcher is the same individual; it is important work is checked by others to ensure trustworthiness and integrity (Barab and Squire, 2004; Kennedy-Clark, 2013; Creswell and Poth, 2017c).

4.3.4.6 Validation strategies

Nine validation strategies are described by Creswell and Poth (2017)., who suggest that at least two validation strategies should be used in each qualitative study to validate results.

This study utilised five validation strategies (triangulation, generating rich descriptions, reflexivity, peer debriefing, disconfirming evidence) to ensure an accurate presentation and interpretation of the results, so that the reader may have confidence that the findings presented are valid.

Participants from different healthcare professions, different roles and places of work were recruited to this study, enabling multiple perspectives to be explored; allowing the data to be triangulated. This enabled rich data to be generated providing detailed descriptive accounts of the current training model and working practices of hospital pharmacists. Disconfirming evidence was provided as participants shared different views. A reflexive account of the researcher described her views and the steps taken to peer debrief the study findings with another member of the research team (JS) regarding the interpretation of results.

The remaining four validation strategies that were not used as part of this study were: member checking, prolonged engagement in the field, collaborating with participants and external audits. Prolonged engagement in the field and collaborating with participants were not appropriate to carry out as part of this study, which sought to capture a snapshot perspective of the views of participants. Member checking could not be undertaken, as it took the researcher more than 6 months to fully analyse and interpret this data. Hence, it is unlikely that participants would have been able to remember what was discussed and so member checking would have yielded no added value and may have produced confounding data. An external audit was not conducted since the researcher (HK) liaised with the research team, who worked with her to ensure the data supports the interpretations made.

4.4 Results

Thirty-seven people were recruited to this study. The table below presents the focus group/interview they took part in, their role and their assigned participant identification code. The decision was made by the research team not to gather participant demographic information such as gender, age, ethnicity as this could lead to the identification of participants.

Table 3: Chapter 4 participants' information.

Focus group/Interview	**Role**	**Participant Identification**
Focus group 1	Newly qualified hospital pharmacist	NQ1 - NQ5
Focus group 2	Newly qualified hospital pharmacist	NQ11 – NQ19
Focus group 3	Pre-registration manager	PM1 – PM5
Focus group 4	Chief Pharmacist	CP1 – CP4
Focus group 5	Diploma tutor	DT1 – DT3
Interview	Doctor	DR1
Focus group 6	Doctor	DR2 – DR5
Focus group 7	Nurse & Ward Pharmacist	NS1 & WP1
Focus group 8	Nurse	NS2 – NS3
Interviews	Placement facilitator	PF1 - PF4

The newly qualified hospital pharmacists, pre-registration managers, chief pharmacists and diploma tutors were recruited from networks across the East of England. The participants worked for different organisations and had varying levels of experience in their given role. The doctors, nurses and ward pharmacist were recruited from hospitals 1 & 2. The placement facilitators were recruited from the UEA and held different positions of responsibility for facilitating placements for healthcare professional students, including: medicine, nursing, physiotherapy, occupational therapy and physician associate.

Initially, the study design intended for the multi-disciplinary focus groups to consist of pharmacists, nurses and doctors but difficulties were encountered trying to arrange a time when it was convenient for all these individuals. To overcome this, a focus group or interview was conducted with each participant based on their availability. Often, when research is conducted in the real context, there is a compromise between what is ideal and what is possible (McKenney and Reeves, 2012b).

Prior to some interviews/focus groups commencing, the participants asked the researcher (HK) about her background, whether she was a pharmacist and whether she had previous experience working in a hospital. The researcher answered these questions prior to commencing the recording but did not discuss her previous experiences with the participants. Four key themes and accompanying subthemes were identified from the data collected, see Table 4.

Table 4: Chapter 4 results themes and subthemes.

Theme	Subthemes
Context	Experiential placements
	Current training model
	Pharmacist working conditions
Perceived Barriers	Rationale
	Supervision
	Menial tasks
	Qualifying and practising as a pharmacist
	GPhC requirements
	Pharmacy department wants to maintain control
Perceived Enablers	Part of the team
	Potential benefits
	Interprofessional working
	Ward culture
Design	Guidance
	Structure
	Length
	Responsibility and supervision
	Activities
	Recruitment
	Working with key stakeholders

4.4.1 Context

All pharmacist participants discussed the current training model for pre-registration pharmacists. Newly qualified pharmacists expressed discontent with the block rotational model. This model fostered a culture of shadowing and there were limited opportunities as trainees to work as part of the multi-disciplinary team.

Diploma tutors and newly qualified pharmacists identified specific gaps in pre-registration training such as decision-making, which affected the ability of pharmacists to practise confidently upon registration.

The conditions for pharmacists working in hospital described the lack of time pharmacists have to carry out patient-facing roles and how pharmacists were not considered part of the ward team. Participants believed that patient care could be improved if pharmacists had an enhanced role on the ward.

4.4.1.1 Experiential placements

Newly qualified pharmacists described how their pharmacy degree had not prepared them for hospital pre-registration training. This was attributed to large quantities of didactic teaching in seemingly less important topics for practising as a pharmacist. Placement facilitators acknowledged experiential placements as part of the allied healthcare and medical degrees supported the workforce to develop the clinical and person-centred skills necessary for future practice.

"…our [medical] graduates are very well prepared when they go into practice and some of that is because they've had a five-year course that has had interaction with patients and placement all the way through…" PF2

4.4.1.2 Current training model

4.4.1.2.1 Block rotational training

Pre-registration managers were aware of the lack of experiential placements during the pharmacy degree and that some trainees may have no prior experience working in a pharmacy setting. The pre-registration pharmacist training programme consisted of a series of rotations through different clinical and technical areas, the dispensary often being the first area trainees rotated in, followed by other areas in the pharmacy department and then the wards. Newly qualified pharmacists encountered a range of difficulties as a result of moving around so frequently; namely not having a working relationship with ward staff.

"I found it really difficult that we moved around loads…in our pre-reg we moved somewhere different every week and if you're on the same ward, you

know the same ward staff, you know what the ward do, you know what the doctors do and you'd have the same pharmacist so…you'd understand what's expected of you…" NQ17

The newly qualified pharmacists also identified differences in pharmacists' supervision styles as a barrier to rotating effectively. Supervising pharmacists were sometimes unaware of the stage of training the pre-registration pharmacist had reached. Trainees were often uncertain of what their supervising pharmacist expected from them. Each supervising pharmacist expected different levels of independent practice and trainees struggled to understand where the boundaries for their practice lay on any given rotation.

"…depending on who you were being supervised by, depends greatly on what they are happy for you to be doing or not and that actually is really quite tricky as a pre-reg to know what that person wants" NQ14

These transitions between teams and environments meant it delayed the pre-registration pharmacists' professional socialisation. Newly qualified pharmacists identified that the time taken to learn what their role was as a trainee during each ward rotation was a waste of time and acted as a barrier to integrating with staff on the ward. Pre-registration managers, diploma tutors or chief pharmacists did not identify the lack of opportunities to apply learning in practice during rotations.

"you had a week and then by the end of the week, you kind of vaguely knew what clinically you needed to know, but then hadn't actually had any practical experience applying that" NQ14

Staffing shortages also affected the quality of learning opportunities available for pre-registration pharmacists. This was due to the trainees undertaking more technical roles, which required less pharmacist support, as opposed to accessing opportunities to learn alongside other members of the healthcare team.

"…because we're [pharmacy department] short [staffed] we get them [pre-registration pharmacists] doing MR's [medicines reconciliations]…and

discharges and they're not…find[ing] out about the patients…sit[ting] in the MDT [multi-disciplinary team meeting] with the doctors…" WP1

4.4.1.2.2 Longer rotations

During the last few weeks of the pre-registration year, some newly qualified pharmacists described how they were allocated to work on one ward and that they enjoyed this experience because they got to know the ward team. A longer period of time on one ward enabled the trainees to begin to understand how the ward functioned and develop better working relationships with staff. However, fewer rotations during the pre-registration year did leave the trainees feeling more nervous about sitting the registration exam, due to the perceived reduction in breadth of experience.

"in my pre-reg…we didn't rotate as much so I was…a few months on the…same ward and in a way it was good because I got to…know the staff, get to know how it works…[but] when it came to the exam, there were loads of areas that I hadn't worked in…" NQ13

Medical students and ward staff reported greatest satisfaction with longer placements. This was attributed to the students having the opportunity to work as part of the team; delivering care to patients in that setting.

"…students really like that [placement in final year] because until that point they've sort of dipped in and out of departments and they've not really been able to get to know anybody or feel like they've become part of the team…" PF2

4.4.1.2.3 Shadowing

The pre-registration training model fostered a culture of shadowing. Trainees were unable to access opportunities to practise independently under the supervision of a pharmacist. The consequences of pre-registration pharmacists spending too much time shadowing others resulted in newly qualified pharmacists lacking the practical skills to perform their role once registered.

"…we literally just spent the entire year shadowing then day 1 as a pharmacist you're like 'Urgh! Don't actually know how to do any of this myself!'" NQ5

The ward pharmacist was also aware that trainees spent large periods of time shadowing. This prohibited the trainees from gathering evidence to demonstrate they have achieved GPhC performance standards.

"…at the moment when they [pre-registration pharmacists] shadow, they're watching us [pharmacists] do it [work] which doesn't give them the evidence…" WP1

Pre-registration pharmacists described how shadowing pharmacists was frustrating and boring. This was partly attributed to the trainees feeling like a burden to the pharmacists supervising them. The pre-registration pharmacists couldn't contribute to patient care and lost enthusiasm for their role. All newly qualified pharmacists in focus group 2 identified with the feeling of burden during their training. The pre-registration managers and chief pharmacists did not identify the trainees as a burden to the department or the wards.

"…you [pre-registration pharmacist] do feel like you're getting in people's way…feeling like I was a burden on everyone else that is training me… I think if you yeah had a purpose… had responsibilities made decisions…it would have made it a lot easier to integrate into being an actual pharmacist" NQ16

Placement facilitators emphasised that the supernumerary status of trainee healthcare professionals should enable them to participate at work in an active capacity. This would allow students to more easily achieve their learning outcomes, rather than shadowing others.

"…students…get a lot more out of working in a supernumerary capacity…than they do shadowing…to develop…professional confidence and competence…'doing' is far preferable…" PF1

None of these sentiments were shared by the pre-registration managers who considered the rotational training model was producing effective pharmacists. This was justified by the high pass rate of hospital pre-registration pharmacists at the registration assessment.

"…it's [success of training programme] proven in the pass rate isn't it? That the pre-reg's are passing at quite a high rate" PM5

4.4.1.2.4 Registration exam

The rotational model of pre-registration pharmacist training may be designed and structured to provide trainees with a range of experiences, reflecting the breadth of knowledge required to pass the registration exam. This does not necessarily result in well-rounded pharmacists.

"…at the moment we have a system [rotational training model] that works…in order for them to pass their pre-reg exam and actually qualify as a pharmacist. Whether that produces a good pharmacist at the end of it, I don't know" CP4

For most pharmacist participants, the purpose of the pre-registration year was to ensure the trainees passed the registration assessment. Pre-registration managers acknowledged there could be a tendency to design training programmes that only considered the exam and not the future practise of the pharmacist. Some pre-registration pharmacists became completely exam-focussed in their approach to learning and were only prepared to access learning opportunities that would benefit them in the exam.

"…I want them [pre-registration pharmacists] not to be in that mind-set of 'this is what I need to know to pass the exam' and sometimes I think they are" PM4

The pre-registration year was trying to serve two purposes; the registration assessment and the future professional practice of a pharmacist. Therefore, certain activities in the training year will serve one of these better than the other. This can be confusing and frustrating for trainees.

“the pre-reg [year] is mainly there…to pass the pre-reg exam, so obviously it’s got to prepare you for a future as a pharmacist. But…there would be things you’d be doing in the pre-reg exam you won’t be doing as a hospital pharmacist but you need to do them to qualify and to be able to pass that exam…” NQ18

4.4.1.2.5 Gaps in training

Newly qualified pharmacists found their pre-registration training equipped them with the necessary clinical knowledge for practising as a pharmacist but not the practical elements of managing a ward and making decisions. Qualified pharmacists made all decision-making during the pre-registration year. This left the trainees underprepared for making decisions when registered.

“I think it [pre-registration year] probably prepared you in terms of knowledge … but… time management and being able to manage a ward and…make decisions [it didn’t]” NQ11

4.4.1.3 Pharmacist working conditions

Pharmacists described how their day is often fragmented, as they have multiple responsibilities across different departments. This affected their ability to fully integrate into a ward team, as the length of time they could spend on the ward was insufficient to attend the multi-disciplinary team meetings and be viewed as a member of the team.

“…if you’ve got two or three wards or whatever you might be there [on one ward] for like an hour and that’s it and they [ward staff] don’t really see you as part of the team…” NQ11

Pharmacists recognised that they might be known for ‘telling-off’ their colleagues when they have made mistakes prescribing or administering medicines. The pharmacists’ green pen was identified as the most proactive means of communication with the medical team ,which disappointed the doctors, as they found face-to-face communication more effective.

“I mean the green pen is usually the most [pause, laughter] proactive way of [communicating] …we don’t talk enough…talking I think can achieve a lot because then you [doctor] learn things as well…” DR5

Diploma tutors identified that newly qualified pharmacists do not always understand the bed pressures faced by the ward staff and so do not realise the urgency of patient discharge. This lack of understanding can result in pharmacists refusing to fulfil prescriptions for patients whose discharge paperwork may be completed later on in the working day. This would affect the workload of the pharmacy department.

“… last minute discharge, but what you [pharmacists] don’t see is the front door pressure that everyone [ward staff] is pulling their hair out and there’s nowhere to put any patients…and we’re [pharmacy team] kind of going ‘oh it’s too late, you know we can’t deal with that. We need ample warning to sort this out’…” DT2

Nurses noted the inaccessibility of pharmacists in the afternoons affected their capability to provide an organised and pre-emptive medication discharge service. This working relationship fostered a reactive pharmacy service and was turning into a cycle where ultimately patients were suffering through delayed discharges and a lack of access to pharmacy staff who could have conversations about medicines. The lack of time pharmacists spent on the ward was viewed as the main contributing factor for the lack of patient counselling. There was a perception amongst participants from different hospitals that there were multiple missed opportunities for talking to patients about their medicines.

“…even people that come in with…bag loads of medicines and they’re all out of date, that’s never questioned. We [staff] just chuck them away but…there’s often a question that needs to be had...’” NS1

These working conditions left pharmacists acknowledging their patients weren’t getting the attention they needed.

“I know the patient more from a drug chart than actually if I walked past them, which is sad isn’t it?” WP1

4.4.2 Perceived Barriers

Perceived barriers for introducing a ward placement varied widely and were almost exclusively reported by pharmacist participants. The absence of a rationale for changing the pre-registration training was a considerable barrier for chief pharmacists and pre-registration managers.

This risk to patients from introducing the placement was described with reference to confusion over how supervision and accountability arrangements would work. Unmet expectations for learning and the risk of excessive menial activities during a ward placement were also identified.

The control over pre-registration training by the GPhC and the pharmacy department was perceived to be threatened by the proposed introduction of a ward placement.

4.4.2.1 Rationale

Pre-registration managers described how the current rotational pre-registration training model has the capacity to prepare pre-registration pharmacists for their career; no clear rationale for introducing a ward placement was identified. Half a day spent with allied healthcare professionals was viewed as being enough exposure to appreciate what their role is and how they operate in the hospital. There were no benefits of being placed on a ward for a longer period of time that translated into professional pharmacist practice.

“…so at the moment you know the programmes that we offer do work… I’m not sure what the advantage is of having this new programme over the existing so…why would we want to rock the boat basically?” PM4

4.4.2.2 Supervision

Pharmacist participants expressed uncertainty over the ward staff’s capability to oversee a pre-registration pharmacist completing a ward placement. This

was attributed to non-pharmacy staff lacking sufficient knowledge of the GPhC requirements, the clinical capabilities of a pre-registration pharmacist and understanding that pre-registration pharmacists are unregistered healthcare professionals.

"…[ward] staff, if they don't truly understand that you're [pre-registration pharmacist], just not allowed to do something, they will keep on pushing…for you to do it… I think maybe someone [pre-registration pharmacist] who was bowed to pressure a bit more, could potentially find themselves in quite a dangerous situation" NQ5

Patient harm could arise from the pre-registration pharmacists' unconscious incompetence and the lack of direct pharmacist supervision overseeing their activities. The accountability in the event of such a mistake made by the pre-registration pharmacist when the qualified pharmacist was absent from the ward was of concern to all pharmacist participants.

"…unconscious incompetence…they [pre-registration pharmacists] don't know what they don't know … and so if you throw them on a ward unsupervised by another pharmacist…[it] could be dangerous for patient's care" PM4

The perceived lack of supervision during the ward placement was a source of anxiety for the pre-registration managers and chief pharmacists. Sharing supervision with other healthcare professionals was not an option for most pharmacist participants, partly due to non-pharmacy healthcare professionals' perceived lack of medicines knowledge and the shift patterns of ward staff.

"…I won't feel comfortable leaving them [pre-registration pharmacist] supervised by a nurse or a medical team because the medical teams are very transient…there's not the consistency and this is why we have a tutor and this is why we manage all these things closely" PM4

The ward pharmacist input into delivering the ward placement was perceived to be significant and would be an additional burden to their already very

heavy workload. Pre-registration managers perceived that the wards would be too busy to manage a pre-registration pharmacist. For newly qualified pharmacists, the concept of having to supervise a pre-registration pharmacist everyday appeared inconceivable.

"… would you [ward pharmacist] want a pre-reg with you…for an extended period of time? Cos they do slow you down…it does put a massive strain on your workload" NQ12

The individual personality of the pre-registration pharmacist could also affect how they worked on the ward, pre-registration pharmacists who are overconfident may cause patient harm and those who are less confident may become a burden to the ward.

"…the problem…with pre-reg's is some are over confident and obviously will give advice when they're probably not…experienced enough to give that advice and then some will be worried to give any advice…there's like a real different spectrum of pre-reg's and what they do and you need to kind of harness that before you let them loose on the ward" NQ16

The supervision of medical and physician associate students during their placements were managed differently to pre-registration pharmacists since these students did not have an allocated 'supervisor' during their placement, or indeed someone who monitors their activities. Rather, the medical team share responsibility for overseeing their activities. Due to the newer role of the physician associates, the day-to-day supervision of these students remains open to interpretation by doctors.

"…they've [physician associates] got to be under medical supervision…that can be used in a very loose sense or in a very tight sense and it's open to interpretation…there are no set learning objectives for them…it [syllabus] basically…20 sheets of paper maximum…" PF3

4.4.2.3 Menial tasks

Chief pharmacists expressed concerns that the placement would only ever be able to offer pre-registration pharmacists the opportunity to shadow other members of the multi-disciplinary team and not afford the chance to gain independence through acquiring more responsibility from working on the ward. Members of the multi-disciplinary team highlighted the risk of trainees being utilised to provide a pharmacy service to the ward and not being able to access potential learning opportunities.

"… my only other concern is being taken advantage of…knowing from medical students, they sometimes fall into almost service provision role …" DR1

If pre-registration pharmacists fell into a service provision role, there was a perceived risk that they could also be asked to perform tasks that would not benefit their learning. In addition, pharmacist participants also reported the pre-registration pharmacist would not have enough work to do on a hospital ward, as much of the ward activities are not medicines-based.

"…I would hate for a pre-reg to spend a prolonged period of time on a ward where they're actually only learning something or doing something of any pharmaceutical value for about an hour and a half a day. And they were spending the remaining six hours stood there like a spare wotsit at a wedding, or learning how to make a bed. Because that is not going to do anything for them once they've qualified" CP4

Pre-registration managers noted the clinical knowledge of the pre-registration pharmacist could improve during a ward placement. However, the additional time spent learning about patient cases and producing care plans would result in extra work for the pre-registration manager, which they did not have time for. In addition, a ward placement that involved producing care plans would give the pre-registration pharmacists an unrealistic expectation of the pharmacy service they could offer once qualified.

"… if you…had your pre-reg writing a completely comprehensive care plan for every patient…they're going to come out with very very sound clinical knowledge. But then somebody has got to…review that with them…[and] as soon as they qualify they've…got to see their 26 patients in two hours…" PM3

4.4.2.4 Qualifying and practising as a pharmacist

The introduction of an extended ward placement would result in fewer rotations overall in the training year; hence to accommodate a ward placement, some rotations would need to be removed or shortened. This was unacceptable to some participants who did not want the timetable altered.

"you need your…stores, procurement knowledge, you need…dispensary, screening and checking stuff as you're underpinning…pharmacist role" DT2

The ward placement could also limit the conditions and medicines pre-registration pharmacists would become acquainted with, which may affect their ability to pass the registration exam. The absence of any assurances from the researcher that the trainees could still pass the registration exam as a result of introducing a ward placement was an identified barrier.

"…if we put them on a ward…they're not going to get exposure to…all the different diseases…" PM5

Apprehension over whether a ward placement would enable pre-registration pharmacists to acquire the knowledge and skills required to prepare them for practise as a qualified pharmacist was a concern. Information relating to medicines such as doses, interactions, monitoring of medicines would be difficult to learn on a hospital ward. Furthermore, a ward placement may not be suitable for producing pharmacists who are able to cope with the demands and pressures faced working in NHS hospitals and meet the Carter agenda.

"… you've got these trainees, they've just come out of uni who we're trying to turn into good clinical pharmacists…and you're just going to stick them on a ward with I don't know who…I'm not sure like if that's all going to actually result in a well-rounded pre-reg who can cope with the constraints that our clinical teams are facing right now…" PM5

4.4.2.5 GPhC requirements

Apprehension surrounding pre-registration pharmacists being able to meet the GPhC requirements during the ward placement were frequently raised. Pre-registration managers were concerned the ward staff would not be able to support the trainees to become professional pharmacists because they had not undergone the GPhC accreditation process themselves. Thus, the supervision of pre-registration pharmacists by non-pharmacy healthcare professionals was conflicting with the supervisory requirements determined by the GPhC.

"…leaving them [pre-registration pharmacists] unsupervised [by a pharmacist]….I think we're running a legal risk about what GPhC say that pre-reg's are allowed to do" PM5

Other points regarding the legal boundaries of practice for pre-registration pharmacists also extended to giving advice to healthcare professionals. The lack of indemnity insurance for pre-registration pharmacists to give advice could leave them exposed.

"… they [pre-registration pharmacists] can't be referred to for advice …they're not legally qualified, therefore they can't give that advice…" PM5

Questions over whether the pre-registration pharmacists would be able to acquire sufficient evidence in support of having achieved the GPhC performance standards were also raised by chief pharmacists. Doubts were cast over the ability of a ward placement to ensure the performance standards could be achieved.

"…there is a fundamental section of those competencies I see it will be really difficult [to achieve]…simply by being on the ward" CP3

4.4.2.6 Pharmacy department wants to maintain control

A ward placement would place the control of pre-registration training into the hands of the ward pharmacist and other members of the multi-disciplinary team. The sharing of pre-registration pharmacist training with other professions was described by chief pharmacists and pre-registration managers as 'losing control'. This view was not expressed by diploma tutors, newly qualified pharmacists or members of the multi-disciplinary ward team.

"…I think we're [chief pharmacists] control freaks aren't we?...we still want to maintain control of this [training programmes]. If we said 'Ok let's just leave them on the ward for six months and come back and see what we find…' we haven't got control of that and I would have no confidence that we would have a competent pharmacist at the end of the year" CP1

The pre-registration managers identified no place for the pre-registration pharmacists within the ward teams. In particular, when the ward teams were perceived to be short staffed they would not be able to host pre-registration pharmacists on a ward placement. In addition, there was the perception that very few ward activities related to medicines. Hence, the role and purpose of a pre-registration pharmacist would be obsolete.

"…how do they fit in that team [pause]? When you know that wards are struggling" PM2

4.4.3 Perceived Enablers

Newly qualified pharmacists, placement facilitators and multi-disciplinary team members identified the potential for pre-registration pharmacists to work as members of the ward team during a ward placement. Benefits associated with working as part of this team could include improving patient care.

Multi-disciplinary team participants were supportive of the project and presented arguments for why their wards were appropriate for hosting a ward placement.

4.4.3.1 Part of the team

Doctors, placement facilitators and newly qualified pharmacists recognised that being part of a team provided more learning opportunities. A longer length of time in one place, was more conducive to team building/working.

"…we [doctors] found…the longer you are on a placement, the more you get out of it. So, although it's nice to see breadth, sometimes it's helpful to ingrain yourself in a team. You certainly get more opportunities the longer you are in one particular place" DR1

Taking part in ward activities such as multi-disciplinary team meetings and consultant ward rounds could provide learning opportunities. Newly qualified pharmacists expressed a desire to acquire more responsibilities so that they could better contribute to patient care on the ward.

"…I think from the point of view of learning it would be better to do it [pharmacy activities] yourself and then you would feel more involved and part of the team, like you're contributing rather than just shadowing." NQ3

4.4.3.2 Potential benefits

Newly qualified pharmacists, diploma tutors, doctors and nurses believed the placement could better prepare trainees for independent practice, through better understanding patient flow and the roles of other healthcare professionals. Enhanced confidence, communication and consultation skills were all viewed as potential positive outcomes for pre-registration pharmacists as a result of a ward placement. Doctors reflected on their own training, citing experiential placements on the hospital wards as a better environment for learning than university.

"… the more you [trainee healthcare professional] are on the ward…the better it is for you after you've qualified. You're more confident, you're more comfortable in that situation…that's more important than those four years of

studying…what I learnt from my experience with the doctor is much more than what I learnt as a student…" DR1

Being present on the ward enables the pre-registration pharmacist to gain exposure to the decision-making processes carried out by the multi-disciplinary team. Newly qualified pharmacists and the ward pharmacist acknowledged this exposure would be one of the most meaningful learning opportunities for the pre-registration pharmacist. Exposure to the decision-making process was the first step to enabling pharmacists to become a part of the team, supporting them to become confident decision makers.

"…I think decision making is probably the most important thing…also to be part of the ward team…a key member of the team, rather than just somebody who just appears every morning and then disappears…" NQ15

The ward placement was an opportunity to raise the profile of pharmacy in the hospital amongst other healthcare professionals and make the pharmacy service more visible and present.

"it [placement] will probably be good for…people's attitude towards us [pharmacy] cos sometimes it can be quite negative and I think if you've got someone that's there for a long time…it might start to improve their [ward staff] attitudes about pharmacy" NQ11

One placement facilitator acknowledged that the role of pharmacists has expanded over the years both in primary and secondary care and that there was scope for it to expand further within the hospital. Crucial though, was the ability of pharmacists to understand how hospital wards operate and determine how pharmacists can utilise their skills to expand their role.

"…we've seen in the past the role of pharmacy has expanded out, we've seen them taking far greater responsibility for things out in the community and within the trust. So, as I said, is there a future role for ward pharmacists beyond what there is now? And if you [pharmacist] understand how a ward functions you might be the person that can shape that" PF4

4.4.3.3 Interprofessional working

The introduction of a ward placement could enable pre-registration pharmacists to work more closely with patients and other members of the healthcare team. The learning opportunities available because of this working relationship may include attending ward meetings and contributing to discussions about patient's care.

"…being on the ward rounds…so they can understand what's going on with the care of the patient…so that they're actually contributing to the patient care whilst they're on the ward" DT3

Doctors explained that patients benefitted from the pharmacists involvement in their care. The doctors drew a link between the continuity of the ward environment and the subsequent building of a working relationship.

"…I think having the pharmacist and having some continuity is important because…they [pharmacists] get to know us [doctors] and the dialogue is a lot better…even for them [pre-registration pharmacists]…some amount of continuity may be a good thing cos then you build up a rapport…" DR5

However, some chief pharmacists and pre-registration managers viewed interprofessional working differently, perceiving the value of working with other healthcare professionals to be limited to a few days.

"my thoughts are that it's perhaps of value to spend a fortnight on the ward…" CP4

Doctors wanted their prescribing decisions to be challenged and they recognised that they currently lack someone in their team who can perform this role.

"…what you need is…a member of your team challenges a consultant because it's very easy to get [to]…'what I say is the law' whereas actually being challenged by someone is helpful from the day to day aspect…I found when I was a junior…having a pharmacist there all the time was fantastic…" DR1

4.4.3.4 Ward culture

The proposed placement wards were identified as calm and supportive learning environments for trainee healthcare professionals. The ward teams had been established for a number of years and the positive learning culture stemmed from the ward sister and consultants.

"…it [proposed placement ward] seems to be a supportive environment. They [students and training healthcare professionals] seem to enjoy their stay here…so that culture seems to be embedded on the ward and I think that's mainly down to the ward sister. I think she encourages them …." DR5

Ward staff expressed support for introducing a ward placement for pre-registration pharmacists in their ward setting, Older People's Medicine (OPM). OPM was an appropriate specialty because of the patient group, older adults with a range of long-term conditions who would be taking a variety of medicines. The pre-registration pharmacist's supernumerary status would allow them to access learning opportunities on the ward.

"… that [being supernumerary]…helps the learning culture…because then they [pre-registration pharmacist] know that there isn't that other pressure…it's important [the pre-registration pharmacist]…sees themselves as a member of the team…that's one of the key aspects the multidisciplinary team and no one is more important or less important… everyone has a role to play" DR5

Newly qualified pharmacists recognised being a part of a ward team, both socially and professionally would ultimately result in better outcomes for patients. Despite never having had pre-registration pharmacists based on their ward before, the nurses were resolute that a place existed for pre-registration pharmacists to come, be part of the team and learn. Nurses identified a range of activities for pre-registration pharmacists to get involved in during the placement.

"… being on a ward is not only useful to them [pre-registration pharmacist]…very useful to the medical and nursing team…cos having a

constant pharmacist there whether they're pre-reg or not saves a lot of time…just having somebody you can ask questions to that's readily available would be hugely useful…in terms of like learning…being familiar with like that daily prescribing like that we do on a general medical ward would be amazing for [their] learning and knowledge" DR3

Doctors expressed a desire for a symbiotic relationship to exist on the ward placement between themselves and the pre-registration pharmacist. They demonstrated an awareness of needing to meet the needs of the learner, particularly during consultant ward rounds and being available to assist with answering questions and discussing problems.

"…I take quite a strong interest in…pharmacology and medications…part of it [placement] is what they [pre-registration pharmacist] can get out of it…Because I teach whatever they want…I tend to find teaching works best if placements work best if again there's a symbiosis really of what people want to get out of it…" DR1

Finally, hospital wards are training environments all year round and the concept of another learner from a different profession within the multi-disciplinary team wouldn't be something which the ward staff were unfamiliar with.

"…they're [ward staff] very used to pre-registration students. Wards are full of pre-registration students….so I don't think you'd have problems with them understanding the concept [of a pre-registration pharmacist placement] at all. It would be very familiar to them…" PF1

4.4.4 Design

The design of the ward placement covered different topics including the guidance and structure of the placement, how the placement should meet the GPhC performance standards and which activities should be incorporated as part of the placement.

4.4.4.1 Guidance

All participants advocated for the introduction of clear guidance for the ward placement. This guidance should support the pre-registration pharmacists and their supervisors to define the scope of their role on the ward, as well as how the placement can meet GPhC requirements. Defined learning outcomes were also necessary to inform the design of the placement.

"…the fundamental thing is first of all what is the outcome that we want to get out of this [placement]?...If we understand the outcome, we can then say well 'how would we design a programme which would deliver that outcome?'…" CP3

4.4.4.2 Structure

In addition to a set of clear learning outcomes, a defined structure for the ward placement was a necessary feature. This could help safeguard the pre-registration pharmacist from abandonment by the pharmacy department or the ward.

"I think it [the placement] would have to be very structured about what they [pre-registration pharmacists] should be doing on their time on the ward" NQ15

All pharmacist participants believed the ward placement should take place once the trainee had experienced working within the hospital pharmacy department. Pharmacists believed the trainees should embed themselves into the pharmacy team first. Trainees would need to learn the names and roles of staff working in pharmacy and learn how to perform pharmacy-based activities, such as dispensing, prior to commencing a ward placement.

"…the whole point of them starting up in dispensary is to also give them a sense of grounding and identity about…the core things that a pharmacist does…" PM5

4.4.4.3 Placement length

The suggested placement length ranged from half a day to six months with no real consistency. Newly qualified pharmacists, doctors and nurses showed a greater affinity towards longer placements. Doctors who had undertaken placements as a part of their initial education and training identified that learning opportunities arose as a result of embedding themselves for several months in a team.

"…by about month three was when I got comfortable with my first job and then had to leave by month four so I think maybe three month placements. I think any less than that may not necessarily be beneficial" DR3

4.4.4.4 Responsibility and supervision

Attending multi-disciplinary team meetings and discussions as part of the placement were identified as opportunities to help pre-registration pharmacists establish their purpose on the ward. Being more involved in the regular ward practices would allow the trainees to build trust which would lead to more responsibilities earlier in their training; with the potential to result in a more competent and confident pharmacist.

"…the most important thing is that pre-reg's have responsibility earlier on and that they have that they feel every day they feel that they have a purpose…that will make them a better pharmacist in the end" NQ17

Giving advice to healthcare professionals about a patient's treatment was something pharmacist participants felt very strongly should not occur unless this advice had been checked by a qualified pharmacist first.

"…I don't think that I would be very comfortable to be leaving my pre-reg on a ward by themselves to be verifying medicines, giving advice to doctors…" NQ5

Newly qualified pharmacists discussed potential 'supervisors' for the ward placement and identified the ward clerk and the ward co-ordinator as individuals who could support and supervise the pre-registration pharmacist.

"…the ward clerk and the co-ordinator and they're good from a work perspective as well because they know who's going home, they know about transport so you're always communicating with them about where TTOs are…" NQ3

Other non-pharmacy members of staff were not perceived to be suitable supervisors for the pre-registration pharmacists.

"…there's a lot of members of staff that don't really know the difference between the different roles of the pharmacy team…and what we are allowed and not allowed to do…" NQ5

Working on the ward was recognised by one of the doctors as putting the pre-registration pharmacist at risk of falling into a service provision role. The need for effective supervision and good pharmacists would be necessary when considering the design of the placement to ensure this did not happen.

"…my only other concern is being taken advantage of…would it just be more of an administerial learning experience rather than a clinical/theoretical one? Obviously if they've got sensible supervisors and decent pharmacists that would…be fine…but knowing from medical students they sometimes fall into a…service provision role rather than one they feel comfortable with…I suppose as long as there's a robust feedback loop and supervision…then that should be easily stoppable" DR1

4.4.4.5 Activities

Possible activities pre-registration pharmacists could undertake as a part of the ward placement were described as enablers for either the ward staff or the trainee. Some activities, such as attending the multi-disciplinary board round meeting were deemed more central to the placement than others. Pharmacists reported not having enough time to attend these meetings during the working day and as a result, felt as though the potential role they could play on the ward was lost. However, should pre-registration pharmacists attend these meetings, this would enable greater collaboration between pharmacy and the ward.

"…if the pre-reg attended those [multi-disciplinary board round meetings]…they could feedback anything relevant to the pharmacist" NQ14

Spending time learning about the responsibilities of the healthcare assistants, such as conducting patient observations was viewed as beneficial. Other activities such as washing patients or making beds were not recommended. However, supporting nursing staff to administer patient's medicines was cited as an important learning opportunity because that practical knowledge would be useful when the trainees qualified as pharmacists.

"…drug rounds because it's something that we [pharmacists] don't really do. And until you're asked by nurses 'Can I do x y z with this?' And you come across the situation you have to deal with. You don't really necessarily know that, other than maybe the theoretical, but the actual practical of how do I do this?...Just seeing the practical difficulties in…being the individual to administer those medications" DT2

Getting involved in activities on the ward that would benefit patients was important and included conducting medicines reconciliations and attending consultant ward rounds.

"… supporting the meds rec process on the ward…being on the ward rounds as well, so they can understand what's going on with the care of the patient …the ward staff will probably find them valuable if…they're actually contributing to the patient care whilst they're on the ward" DT3

Taking an active role in the patient discharge process was also recommended as an essential activity the pre-registration pharmacist could undertake. The opportunity for the pre-registration pharmacist to be involved in having conversations with patients about their medicines as a part of this was also key.

"…being involved in discharging and then talking to patients about their medicines and make sure they understand about the changes…" NS1

Newly qualified pharmacists' focus group 1 (NQ1-NQ5) suggested activities which would traditionally be viewed as the pharmacy assistant's role such as cleaning the drug cupboard, going to get medicines from the dispensary and carrying out controlled drugs audits. These activities could be considered less ambitious than suggestions from focus group 2 (NQ11-NQ19). Focus group 1 participants articulated more passionately that their pre-registration training had not prepared them for independent practice than focus group 2, who were more confident.

4.4.4.6 Recruitment

There was disagreement regarding how the pre-registration pharmacists should be selected to take part in the placement, with some participants favouring a rigorous selection process and others favouring a random choice.

"I think you should do it [choose the pre-registration pharmacists] randomly, pulling straws. Otherwise I think it would be really unfair to a study because you're…bound to choose the more enthusiastic better etc. students to do your project …" PF3

4.4.4.7 Working with key stakeholders

The placement facilitators recognised that the success of the placement would rest on the engagement of the hospital staff and their willingness to work with the researcher to develop the placement. A long preparation and lead in time would be important because the researcher would be relying on the goodwill of busy people.

"…if you [researcher] get practice [the hospital staff] on board that's the key thing…if they're 100% behind you, they will make it work, so I think working with all of your stakeholders…doing it in person and just building up networks and relationships, there doesn't seem to be a shortcut to that…" PF1

4.5 Discussion

4.5.1 Main findings

The results from this study provide a comprehensive picture of pre-registration training, the practice of the ward pharmacist and the barriers and enablers to introducing a ward placement. Newly qualified pharmacists were dissatisfied with their pre-registration training experiences, explaining that large amounts of their time was spent shadowing pharmacists and there was a lack of opportunities for them to practise autonomously. However, chief pharmacists and pre-registration managers did not find fault in these rotational pre-registration training programmes because trainees were passing the registration assessment. This highlighted that the marker for a successful pre-registration training programme is measured against the ability of the trainee to pass a knowledge-based multiple-choice registration assessment, not on their ability to practice as a pharmacist.

The working conditions and practices of hospital pharmacists revealed the lack of time afforded for pharmacists to carry out activities which are patient-facing. Frequently, pharmacists are not considered members of the ward teams. The main barriers to introducing a ward placement into the pre-registration year included the GPhC registration assessment and the GPhC supervision requirements.

Enablers for the placement included the potential it held for supporting pre-registration pharmacists to become part of the ward team, which would improve interprofessional working. In addition, the nurses and doctors participating in this research advocated that their wards would be good hosts for the placement because the culture was supportive and learner-friendly.

The design of the placement covered a range of topics and there was a consistent message from all participants that the design should have clear, guidance, structure and supervisory arrangements.

4.5.2 Strengths and limitations

This study succeeded in exploring the research context and identifying features of the placement's design, through engaging with multi-disciplinary practitioner stakeholders. This is a key feature of the DBR approach that supports the researcher to design education interventions that will work in practice (Barab and Squire, 2004). The interpretation of the data is trustworthy, since triangulation, generating rich descriptions, reflexivity, peer debriefing and disconfirming evidence were used to confirm validity of the study findings.

Pre-registration pharmacists were not recruited to this study because this data was collected within the first 5 months of the pre-registration year. Hence, trainee's ability to provide perspectives on pre-registration training may have been limited because they were at early stage in their training year. The research team tried to account for this by recruiting newly qualified pharmacists who had been registered for fewer than two years.

Only a small number of participants from each professional group were recruited to this study and so these results may not be generalisable to the wider population of that professional group. However, the aim of this study was not to seek to generalise the views of these participants to the wider population, but rather establish current training practices and seek multiple stakeholder perspectives on the introduction of a ward placement for pre-registration pharmacists at hospitals 1 and 2.

During data collection, participants frequently asked the researcher if they were a pharmacist, had they worked in a hospital before, when they qualified and once, where they attended university. It was important to the participants (particularly nurses), that they knew they were talking to someone who understood the ward context. The researcher needed to use her previous experience of working as a hospital pharmacist to gain credibility and build trust with the participants. The researcher did not discuss her previous experiences of working as a hospital pharmacist with the participants. However, it is possible this affected the data collected and so is presented as a limitation of this study.

4.5.3 Main discussion

The contextual descriptions provided by participants in this study suggest that hospital pharmacists are not currently practising as a member of the ward community of practice. One doctor acknowledged that the most proactive form of communication from their ward pharmacist was the green pen, implying the sharing of knowledge between pharmacist and doctors is limited. An example of ward pharmacists refusing to fulfil discharge prescriptions for patients whose paperwork was completed late in the day was described, thus demonstrating that the pharmacists' joint enterprise is not aligned to that of their ward but rather, the pharmacy department.

The peripheral nature of the ward pharmacist within the ward community of practice is not necessarily reflective of a failure of the individual pharmacist to build relationships with the ward team but represents a wider systems failure of the training and working practices of pharmacists. During the degree, pharmacy students do not train in the workplace, develop interprofessional skills or learn to make decisions with other healthcare professionals. Hospital pre-registration training rarely includes long periods on one ward, where trainees can learn how to build effective working relationships. Hence, working on a ward as a newly qualified pharmacist can be daunting and intimidating when very little training over five years has prepared them for this role. The newly qualified pharmacists in this study did not consider themselves part of the ward team.

Barriers to pharmacists crossing the boundary into full membership within the ward community of practice were identified in this study as the pharmacist's multiple departmental responsibilities, non-attendance at multi-disciplinary meetings and limited presence on the ward. In addition, there may not be an identified person who can act as a 'broker' to the pharmacist to support their transition onto the ward. Furthermore, the limited time a hospital pharmacist may be present on a ward during the day would restrict the ability of any potential broker to support the pharmacist's integration into the ward community of practice. This could result in the pharmacist only ever

achieving peripheral membership in the ward community of practice, as they cannot cross the boundary into the ward community of practice.

The peripheral nature of the ward pharmacist in the ward community of practice appears to hold consequences for the training of pre-registration pharmacists. These results show that pre-registration pharmacists spend large amounts of time shadowing the ward pharmacist whilst they work and performing large quantities of medicines reconciliations. In the 'meat-cutter community' observed by Lave and Wenger (1991), apprentices were denied the opportunity to participate in meaningful practice, instead being used as a form of cheap labour, thus marginalising the apprentices and making it difficult for them to participate in more sophisticated practice.

In this study, evidence has been presented to suggest that the ward pharmacist cannot act as a broker to provide the pre-registration pharmacist with access to more sophisticated levels of practice through learning opportunities on the ward, since the pharmacist themselves holds only peripheral ward membership. This presents significant challenges for ward pharmacists as they cannot share the responsibility for training on the ward with other ward staff. This contributes to the feeling of burden pre-registration pharmacists experience during training. Pre-registration managers identified that they were reluctant to introduce a ward placement onto busy wards, which could suggest that they also perceive pre-registration pharmacists as a burden to a ward.

One solution to overcoming this sense of burden was highlighted by the doctors in this study who acknowledged that if a pre-registration pharmacist could perform useful duties on the ward, then they would not become a burden. Doctors, nurses and placement facilitators expressed a different concern; that pre-registration pharmacists were at risk of falling into a service provision role. This perspective may imply a lack of awareness regarding the capability and competence of a pre-registration pharmacist but also suggests that with the proper training and enough time, pre-registration pharmacists could become useful members of the ward team.

In the current training model, pre-registration pharmacists usually rotate every 1-3 weeks, depending on the hospital. Difficulties associated with frequent rotations were described by newly qualified pharmacists who found that not knowing the ward staff was a barrier to their ability to build relationships with them. Communities of practice describes the importance of time with respect to establishing membership within a community to enable access to learning opportunities (Wenger, 1998). Therefore, it is unlikely that pre-registration pharmacists would be able to acquire even peripheral membership in ward communities of practice when they are only on the ward for such short periods. Short rotations further limit the ability of pre-registration pharmacists to take advantage of the learning opportunities that are available on the ward.

The registration exam assesses a broad curriculum of topic areas including; the cardiovascular system, anaesthesia and malignant disease (General Pharmaceutical Council, 2020d). It is possible that pre-registration managers and tutors have designed hospital pre-registration training programmes to reflect the nature of the registration assessment, covering a wide range of specialties to ensure trainees are exposed to the different topic areas the registration assessment covers. However, as Holmboe et al. (2011)., identified, the assumption that more rotations equals more learning opportunities is not supported by sociology, learning theory or evidence from the literature. Communities of practice describes how membership within a community of practitioners enables trainees to access more learning opportunities, develop competence and establish their own practitioner identity (Wenger, 1998). Crucially, situated learning emphasises the importance of time, highlighting that it takes time for people to acquire membership within a community of practice and that they may need to be supported by more experienced members (brokers) to attain membership within the community (Lave and Wenger, 1991; Wenger, 1998; Wenger-Trayner *et al.*, 2014). The results from this study infer that pre-registration pharmacists are not given enough time during their rotations on hospital wards to enable them to develop skills such as decision-making to prepare them for practice. Decision-making is an important skill for pharmacists. If

newly qualified pharmacists struggle to make decisions, or perform the basic functions of a pharmacist, the question must be asked why the pre-registration tutor signed off trainees as ‘fit to practise’. This may be due to the GPhC’s lack of training, support and accreditation processes.

When one newly qualified pharmacist reported having longer placements on fewer wards, they expressed anxiety over sitting the registration assessment. The pre-registration year serves two purposes: the trainee’s future practice as a pharmacist and the registration assessment. Pre-registration managers and tutors must therefore design training programmes that can prepare trainees to succeed in both. Pre-registration managers and tutors are expected to do this with no formal training on education, designing training programmes, assessing progress, supervising trainees and often have no protected time for carrying out educational activities from their employer (Mills, Blenkinsopp and Black, 2013; General Pharmaceutical Council, 2018).

The registration assessment and GPhC performance standards were identified as some of the barriers to introducing a ward placement. The absence of any guarantees that trainees undertaking a ward placement would still be able to pass the registration assessment was of concern to the chief pharmacists and pre-registration managers. This, combined with the absence of a clear rationale for introducing a ward placement, there not being enough for a pre-registration pharmacist to do on a ward, and the risk to patients from pre-registration pharmacists giving out incorrect advice, led pre-registration managers to reject incorporating a ward placement as part of pre-registration pharmacist training. Building relationships with ward staff or working as part of the ward team were not discussed by the chief pharmacists or pre-registration managers. This could suggest that these individuals do not currently, and have never, attained full membership in a ward community of practice and so cannot identify the possible learning opportunities that may arise as a result of membership.

Supervision of the pre-registration pharmacists by non-pharmacy members of staff was considered a barrier to introducing a ward placement as there appeared to be a culture of fear amongst the pharmacist participants

regarding the potential for pre-registration pharmacists to give out incorrect advice to other healthcare professionals. It is possible this culture of fear may originate from an offence committed under Section 64 of the Medicines Act 1968 by a pre-registration pharmacist and pharmacist. The pre-registration pharmacist dispensed peppermint water to a baby that contained a 20-fold excess of chloroform, causing the baby to experience cardiac arrest and die. The pre-registration pharmacist prepared and dispensed the peppermint water incorrectly. The pharmacist did not check the quantities used to prepare the formulation. The pharmacist faced the same charges under the Medicines Act as the pre-registration pharmacist (Nathan, 2003). Hence, there may be a reluctance from pharmacists to provide pre-registration pharmacists with more autonomy during short block rotations because the pharmacist does not have enough time to understand the competence of the pre-registration pharmacist. Therefore, to protect patients and themselves, pharmacists do not provide pre-registration pharmacists with sufficient autonomy to develop the skills needed to practice as a pharmacist, such as decision-making.

Newly qualified pharmacists suggested that, in the absence of a pharmacist, the ward clerk or discharge coordinator could act as supervisors to the pre-registration pharmacist during a ward placement. It is possible that this suggestion reflects the current practice of these pharmacists; the ward clerk and discharge coordinator may be the individuals these newly qualified pharmacists interact with most frequently on the ward. The ward clerk and discharge coordinator will possess information on new patients admitted to the ward and those preparing for discharge.

The placement facilitators highlighted that the concept of ‘pre-registration’ healthcare professionals was not a new concept to ward teams. Examples were given of how medical and physicians associate students were not allocated to specific doctors, but rather to teams and wards in a more flexible approach to supervision. Yet, chief pharmacists made it clear that a ward placement could invoke a loss of control over pre-registration training and the ability of non-pharmacy healthcare professionals to supervise pre-registration pharmacists on wards was questionable.

Chief pharmacists and pre-registration managers also identified that there would not be enough medicines-related activities for pre-registration pharmacists to become involved with on a hospital ward and they were at risk of becoming a spare part. This perspective was not shared by the ward pharmacist, doctors or nurses who listed a variety of activities pre-registration pharmacists could get involved with on the ward, which included attending consultant ward rounds, conducting patient observations and supporting medicines administration. However, it was pointed out that these activities may not help pre-registration pharmacists to pass the registration assessment, demonstrating again the challenge of the pre-registration year to both equip trainees for practice and prepare them for the registration assessment.

The suggested length of time for the ward placement varied. Pharmacist participants generally favoured shorter placements, wanting to ensure trainees could undertake rotations in multiple areas to equip trainees to pass the registration assessment. Doctors and nurses recommended longer placements to enable the pre-registration pharmacist to have sufficient time to embed themselves into the ward team. Often, medical and nursing participants reflected on their own experiences as junior members of staff and recalled how long it took them to embed into a team.

All participants advocated for clear guidance, structure and supervisory arrangements for the pre-registration pharmacist and one placement facilitator addressed the researcher directly when describing the importance of maintaining good working relationships with the stakeholders involved in the research, which the DBR approach advocates for (Barab and Squire, 2004).

4.5.4 Summary

The results from this study have contextualised hospital pre-registration training, ward pharmacist working practices and discovered the role the registration assessment has in the design and delivery of hospital pre-registration training in ways not previously identified in the literature.

Short rotational placements are standard practice, resulting in trainees' observing the practice of the pharmacist whilst they work and performing large quantities of medicines reconciliations. The rotational training model has been designed to reflect the nature of the registration assessment and does not support trainees to develop the interprofessional and decision-making skills necessary for practice as a pharmacist. These results have highlighted that the assumptions held about rotational training in medical education also apply to pre-registration pharmacist training (Holmboe, Ginsburg and Bernabeo, 2011).

The registration assessment was the principal barrier to introducing a ward placement. Since hospital pre-registration pharmacists were passing the registration assessment, there was little incentive for pre-registration managers to 'rock the boat' and change their training model. Chief pharmacists were concerned a ward placement would not enable pre-registration pharmacists to acquire the knowledge needed in order to pass the registration assessment. Resistance to developing a ward placement for pre-registration pharmacists came from within the pharmacy profession, namely chief pharmacists and pre-registration managers, who argued that such training would not fulfil the requirements of the GPhC.

Conversely, doctors and nurses expressed support for the ward placement and gave reasons why their ward would be a suitable environment for a pre-registration pharmacist placement. Newly qualified pharmacists expressed a desire to build relationships with ward staff and enhance their ward experience prior to registering as pharmacists. These individuals went on to suggest design features of the ward placement such as, a clear structure, meaningful responsibilities and possible activities that could be undertaken.

Chapter 5 Design and Construction

5.1 Introduction

The previous chapter described the explorative work undertaken on the introduction of a ward placement for hospital pre-registration pharmacists. The thematic analysis identified four key themes; context, barriers, enablers and design. The design theme highlighted possible features of the ward placement and was made up of the following subthemes:

- Guidance
- Structure
- Length
- Supervision
- Activities
- Recruitment
- Working with stakeholders

Participants made a number of recommendations, namely that the ward placement should have clear guidance and structure, appropriate pharmacist and ward staff supervision and pre-registration pharmacists should undertake medicines-related ward activities. Whilst the placement length and recruitment strategy for pre-registration pharmacists to the ward placement were discussed, no agreement was reached amongst the participants. This chapter describes the methods used to design the ward placement and the resultant key features of the placement design.

5.1.1 Design-based research: Design and construction

Design and construction is the second phase of the DBR approach. It describes how an educational intervention should be developed using practitioners and learning theory to inform design and delivery of the intervention. To design and construct the ward placement, the methods were informed by McKenney and Reeves and are outlined below (McKenney and Reeves, 2012a).

Designing an educational intervention often involves two stages, developing ‘design requirements’ followed by ‘design propositions’. Design requirements

are the features that the design must deliver when the intervention is implemented. For example, ‘the pre-registration pharmacist must be properly supervised’ is an example of a design requirement.

Design propositions are the practical elements of the design that support the intervention to deliver the design requirements. The design propositions represent the ‘how’ aspect of the intervention. Design propositions are often vague and undefined at the start of the design and construction process. Through multiple rounds of refinement, the researcher and a carefully selected group of key stakeholders, tease out the details to produce a design that is informed by theory, literature and explorative work. For example, ‘the pre-registration pharmacist will be supervised by the ward pharmacist, with support from the ward sister’ is an example of a design proposition.

The design requirements should be established first and once these have been outlined, ideas can be further refined to determine the design propositions. This two-stage process also enables researchers/designers to better distinguish between the essential and supportive elements of the intervention.

Designing an education intervention is an iterative process that is continuously adjusted, as ongoing feedback is sought from a team of practitioner stakeholders. Involving practitioner stakeholders increases the likelihood that the intervention design will work in the research context. This team of stakeholders should include practitioners who work in, or with, the area where the intervention will be implemented. They should also be multi-disciplinary where possible and have a range of experiences and roles (Reeves, 2005; Wang and Hannafin, 2005; Wolcott *et al.*, 2019).

5.1.1.1 Designing for learning

In addition to utilising practitioner stakeholders, the DBR approach also uses theory to inform intervention design, implementation and evaluation (Wolcott *et al.*, 2019).

Experiential learning theory describes how experience leads to learning through learner’s reflecting and identifying ways to improve their practice

(Kolb, 1984). The ward placement, should therefore provide opportunities for pre-registration pharmacists to reflect on their experiences in order to learn from them.

Situated learning theory identifies the importance of the social context and the significant role more experienced individuals (masters) play in supporting those with less experience (apprentices) to develop through legitimate peripheral participation (Lave and Wenger, 1991). Consequently, the ward placement design should enable opportunities for legitimate peripheral participation to take place, through supporting interactions between experienced ward staff (e.g. pharmacist/nurses/doctors) and the pre-registration pharmacists.

Communities of practice theory describes how it is not possible to design learning itself, but that an environment can be organised to enable learning to become a part of social practice. To enable this to happen, designs must remain flexible and unrestricted so that rare learning opportunities can be exploited. Learning objectives, access to resources, discussions about the work and participation in meaningful activities are ways in which an environment can be organised to support learning. Individuals known as 'brokers' may be needed to support trainees to transition into membership within the community of practice (Wenger, 1998).

Drawing from communities of practice theory, it is therefore important to consider these points when developing the placement design:

- Pre-registration pharmacists are supported by their pre-registration tutor and ward supervisor(s), to agree daily and longer-term objectives that will enable the trainee to plan for learning.
- The pre-registration pharmacists are suitably equipped with access to the relevant computer systems and are trained to use pharmacy resources to find information e.g. medicines information resources.
- The pre-registration pharmacists should attend multi-disciplinary team meetings, where the care of patients is discussed.

- The pre-registration pharmacist can participate in activities on the ward that are meaningful to their future practice.
- Members of staff who could act as potential ‘brokers’ for the pre-registration pharmacists are identified and given the opportunity to undertake a ‘brokering’ role.

The design process should be well documented so that readers can see the different iterations of the design and understand how the final design came to exist. This will enable the research to better contribute to the literature regarding the theoretical understanding of designing interventions (Ormel et al., 2012).

5.1.1.2 Design requirements and propositions

The explorative work (chapter 4) determined some of the design requirements for the ward placement, such as the placement needing to have a clear structure and clear guidance. However, it failed to identity all design requirements needed to inform the development of the placement and was not able to determine any of the design propositions for the ward placement.

Brown and Stockman (2013)., reported that thematic analysis of their data was not detailed enough for the development of their communication technology-based intervention. They found that as codes were grouped together and themes generated, their data became less useful for informing the intervention design. A review of the six-step method of thematic analysis is presented below:

Step 1: Familiarisation with the data (repeated reading).

Step 2: Generation of initial codes (short descriptions).

Step 3: Searching for themes (group codes to categories).

Step 4: Reviewing of themes (re-sort categories – seek research team support).

Step 5: Defining and naming themes (label themes).

Step 6: Production of the report (write up results).

(Braun and Clarke, 2006).

Brown and Stockman (2013)., explained that steps 1-3 of thematic analysis were beneficial to undertake for the purpose of designing the intervention, since this data was more detailed. However, steps 4-6 lacked sufficient detail to be useful for designing the intervention (Brown and Stockman, 2013).

Whilst the main elements which require consideration in designing a ward placement for pre-registration pharmacists have been identified from the design theme of the thematic analysis (chapter 4), there is significant detail missing. According to DBR, the ward placement should be developed in an iterative manner using practitioner stakeholders and learning theory (McKenney and Reeves, 2012a).

The methods selected for data collection and analysis to inform the placement design, should be based on the pragmatic philosophical underpinning of this research by asking the question of 'what works?' (Morgan, 2014; Creswell and Poth, 2017b). In this case, the more detailed the analysis, the more useful it will be for informing the design propositions and requirements.

5.2 Aim and objectives

Aim:

Design a ward placement as part of the training programme for hospital pre-registration pharmacists.

Objectives:

- Identify key features of the placement design such as length and timing.
- Describe the activities pre-registration pharmacists will participate in.
- Describe how the placement design should be implemented.

5.3 Method

5.3.1 Ethical approval

Ethical approval for this study was obtained from the University of East Anglia Research and Ethics Committee (appendix 1) and governance approval from the Health Research Authority (appendix 2). Please note that information that could lead to the identification of participants, has been redacted from these approvals.

5.3.2 Reflexivity

In DBR studies, the researcher is also the designer of the intervention and should therefore remain objective, flexible and adaptable; taking great care to ensure their role as designer of the intervention does not compromise their role as researcher of the intervention (Plomp, 2007). During the design of the intervention, it is important that researchers do not impose their own beliefs regarding the intervention design on the stakeholders. Rather, they should seek to gather the views of stakeholders to inform the development of the intervention (Reeves, 2005; Wang and Hannafin, 2005; Getenet, 2019).

Practising reflexivity can enable researchers to identify any potential ideas or opinions they have regarding the design of the intervention, which can then be addressed by the research team (Amin *et al.*, 2020). Below is the reflexive account of the researcher (HK) regarding the design of the ward placement:

March 2018

Prior to commencing the design process there were many things I was still uncertain of regarding the placement design. Namely, what the placement would involve on a day-to-day basis and how the supervision arrangements would work. However, I also had ideas of what the design should incorporate. These included pre-registration pharmacists attending consultant ward rounds and observing the medicines administration process. From my review of the literature, I also wanted to develop a longitudinal placement, since this was widely recommended in medical education research.

I did not want to let these ideas influence the stakeholders and subsequent placement design. Having an awareness of how my own views could influence the stakeholder participants helped me to devise a method for designing the ward placement that harnessed the participant's ideas and allowed me to be transparent about my own.

5.3.3 Study design

The study design consists of three phases:

Phase 1: Determining the design requirements and propositions.

Phase 2: Working with key stakeholders to develop the placement design.

Phase 3: Obtaining agreement from a multi-stakeholder advisory panel on placement design.

The figure below provides an overview of each phase:

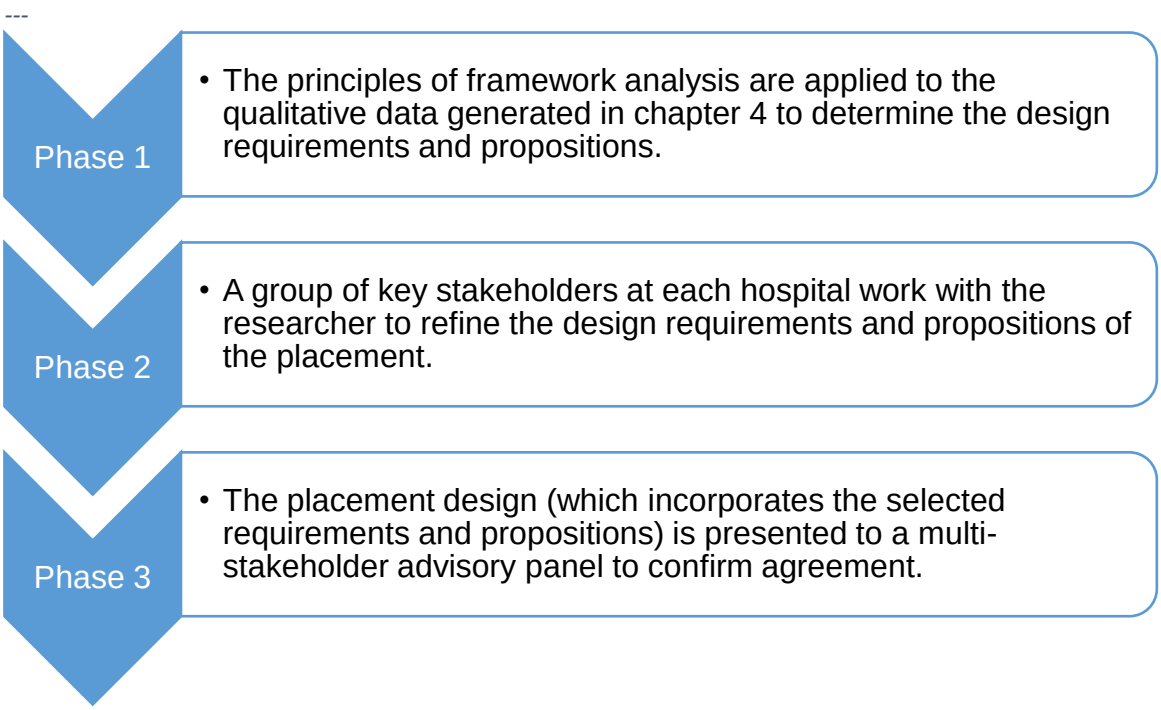

Figure 5: Chapter 5 Process

5.3.3.1 Phase 1

Determining the design requirements and propositions

Data generated by the design theme in Chapter 4 did not provide sufficient detail to inform the placement design. This data needed to be re-analysed in order to determine the design requirements and propositions of the ward placement.

The 'Framework Method' is a systematic step-by-step analysis of qualitative data which involves displaying the results in detailed matrices (Gale *et al.*, 2013). The following stages were applied to the data generated in the design theme of Chapter 4:

Stage 1: Transcription (Chapter 4).

Stage 2: Familiarisation with the data (Chapter 4).

Stage 3: Coding (Chapter 4).

Stage 4: Develop a working analytical framework (Chapter 5).

Stage 5: Applying the analytical framework (Chapter 5).

Stage 6: Charting data into the framework matrix (Chapter 5).

Stage 7: Interpreting the data (Chapter 5).

(Gale *et al.*, 2013).

Stages 1-3

Transcription, familiarisation with the data and initial coding were completed as part of the thematic analysis presented in Chapter 4. The initial codes ascribed to the data were developed during the thematic analysis and were stored in an NVivo QSR International Version 11 database.

Stage 4

The working analytical framework was developed based on the aim and objectives of the research. The two categories within the framework were 'Design requirements' and 'Design propositions'.

Stage 5

The coded data (not the corresponding quotes) and participants IDs were inputted into either a 'Design requirements' or 'Design propositions' framework matrix. Microsoft Excel® was used to store and manage the data.

For example, the code *'Activities must be mapped to the GPhC performance standards'* CP3, DT3, DT2 was inserted into the requirements spreadsheet.

Stage 6

Within each matrix, the codes were then grouped and organised according to their design feature. For example, all the codes that related the placement design to the GPhC (like the example above), were organised under the requirement 'GPhC'.

Stage 7

Data was then interpreted to inform the placement design requirements and propositions.

Unanticipated additional consideration

During analysis, it became apparent that codes relating to what the placement *should not* incorporate were also important for designing the ward placement. Hence, the researcher created a third part to the analytical framework, named 'Design concerns'.

The Framework Method was applied in the same way as described above, to insert codes relating to the concerns that participants raised regarding the design of a ward placement.

For example, this included codes such as *'Risk to patient safety'* PM4, PM2, NQ3, NQ5, PM5.

5.3.3.2 Phase 2

Working with key stakeholders to develop the placement design

Involving practitioner stakeholders is a key part of the DBR approach to designing an intervention (McKenney and Reeves, 2012d). Practitioner

stakeholders at hospitals 1 and 2 were identified and approached to work with the researcher to interpret and refine the design requirements and propositions generated during phase 1 of this study.

At hospital 1, the stakeholder group consisted of:

- Pre-registration pharmacist
- Pre-registration pharmacist manager
- Deputy chief pharmacist
- Ward sister (of proposed placement ward)

At hospital 2, the stakeholder group consisted of:

- Pre-registration pharmacist manager
- Pre-registration tutor
- Deputy chief pharmacist (also ward pharmacist of proposed placement ward)
- Ward sister (of proposed placement ward)
- Ward consultant (of proposed placement ward)

The researcher met with the stakeholder group at hospital 1 five times and the stakeholder group at hospital 2 six times to discuss the data relating to the requirements and propositions. These meetings took place 6-9 months prior to the ward placement commencing.

The stakeholder groups identified which design requirements and propositions they would take forward and incorporate into the ward placement design and which ones would be discarded.

These meetings did not involve any formal data collection and analysis, which is not unusual during the design and construction phases of the DBR approach (McKenney and Reeves, 2012d).

The researcher (HK) met regularly with the research team (DW, JS, MC) separately from the stakeholder groups, to update on progress of the placement design. The research team challenged the researcher regarding certain decisions and provided an opportunity for the design to be critically reviewed at various stages.

5.3.3.3 Phase 3

Obtaining agreement from a multi-stakeholder advisory panel on the placement design.

Subjecting proposed intervention designs to appraisal by experts, is recommended as part of the DBR approach (McKenney and Reeves, 2012d). The preliminary placement design determined in phase 2 was presented to a multi-disciplinary stakeholder advisory panel at each hospital in phase 3.

Participant recruitment

The inclusion criteria for persons attending the advisory panel were:

1) Participants must be employed at one of the hospitals and one of the professions listed below:
    - Doctor of the grade FY1 – ST3
    - Doctor of the grade ST4 – Consultant
    - Senior Nurse (deputy sister or above)
    - Ward Nurse
    - Senior pharmacist (Band 8 or above)
    - Ward Pharmacist
    - Pre-registration tutor
    - Pharmacist previously involved in the 'Integrated Care Pharmacist' programme
2) Participants may be patients or public involvement (PPI) (there may be up to two on the advisory panel)

Participants who were part of the practitioner stakeholder groups were emailed directly by the researcher, since they were well-known to the researcher.

Participants from the wards which had been highlighted as potential hosts for the placements were recruited using the chief pharmacist/deputy chief pharmacist as gatekeepers, who contacted the relevant staff members on behalf of the researcher.

Individuals who sat on the pre-registration pharmacist PPI group were approached using the pre-registration pharmacist programme director as a gatekeeper.

The panel lasted one working day (10am – 4pm, with a 1 hour lunch break and tea/coffee breaks) at hospital 1 and an afternoon (1pm – 4pm with a working lunch and a tea/coffee break) at hospital 2. The difference in time allowance for each advisory panel was due to staff availability and different working patterns.

The first multi-stakeholder advisory panel was held at hospital 1 because the placement design was more comprehensive in the earlier stages. The findings from the multi-stakeholder advisory panel at hospital 1 informed the discussions at hospital 2.

Advisory Panel Format

The advisory panels were facilitated by the researcher and an independent person not associated with the research team or with either hospital. The independent person was a pharmacist, with extensive experience of chairing meetings, who led the discussions during the advisory panel.

At the start of the advisory panel, the researcher presented information on current pharmacy education and training (for the benefit of non-pharmacy members of staff), study rationale and learning theory. Participants discussed the following topics:

- Learning outcomes for pre-registration pharmacists.
- Preparation of the pre-registration pharmacists prior to placement.
- Recruitment of pre-registration pharmacists to the placement.
- Week 1 induction.
- Key activities that could be undertaken during placement e.g. medicines management, attendance at board rounds (NB: board rounds are meetings where staff members discuss each patient on the ward, updating one another on diagnosis, the clinical management plan and co-ordinating discharges).

- Role and the boundaries of the role of the pre-registration pharmacists.
- Workplace assessment tools.
- General logistical matters e.g. precise timing of the placement within the year.
- Placement timeline in accordance with proposed activities.

Once each topic, or specific element of the placement design had been discussed, the chair asked the participants if they agreed with each decision. If no objections, suggestions or corrections were made, the chair moved onto discuss the next design feature of the placement.

At the end of each advisory panel, the researcher compiled meeting minutes, updated the appropriate documents and emailed them to all participants.

Reimbursement

In the case of participants who attended the advisory panel during their working hours, their hospital received £200 reimbursement for the time of the member of staff. Participants who attended the advisory panel during their own time received £200 directly. The incentives were offered in recognition that participants were required to take several hours out of their day to participate.

Data collection

The advisory panels were audio-recorded using two digital recording devices. Written informed consent was obtained prior to conducting the recording.

Data analysis

The audio recordings were not analysed but were used by the researcher (HK) to ensure that the meeting minutes had been documented clearly and accurately.

5.3.3.4 Validation strategies

This study has utilised five out of the nine validation strategies for determining credibility of the data: member checking, prolonged engagement in the field, collaborating with participants, peer review of the data and reflexivity.

Providing the practitioner stakeholders with the placement requirements and propositions gave them the opportunity to review the data, clarify suggestions, provide additional background and support or refute certain design ideas. Hence, a type of member checking was carried out on the data gathered during the explorative phase, enhancing the credibility of these findings (Lincoln and Guba, 1985; Creswell and Poth, 2017c).

The researcher met with the research team regularly to provide updates on the progress of the placement design. The team challenged the researcher to defend certain decisions about the placement design, carrying out a form of peer review (Creswell and Poth, 2017c).

The researcher has provided a reflexive account which includes her ideas for the design of the ward placement, enabling the reader to better understand the researcher's perspectives regarding the placement design (Creswell and Poth, 2017c).

The remaining four validation strategies: triangulation, disconfirming evidence, external audit and rich descriptions were not used. Since this study did not analyse any empirical data it was not possible to triangulate, generate disconfirming evidence or rich descriptions as a part of this research. Carrying out an external audit would have provided additional rigour to the study findings; however, this was not possible given the time constraints in preparing the placement design for implementation.

5.4 Results

5.4.1 Phase 1

5.4.1.1 Placement requirements

Twelve categories of placement requirements were established from the explorative data:

- Length of placement
- Timing of placement
- Ward type
- GPhC requirements
- Selection process
- Supervision criteria
- Support
- General guidance
- Clear role
- Advice giving
- Assessment of pre-registration pharmacist
- Team need to be happy

An extract from the placement design requirement matrix has been included below in table 5. For the full list of design requirements, see appendix 7.

Table 5: Placement requirement (extract from appendix 7).

Requirement subclass	Requirement	Who said so?		
Placement length	1-2 weeks	CP1	CP4	
	3 months	NS2	NS3	DR5
	6 months	NQ3	WP1	NS1
Selection process for pre-reg	Random selection	PF3		
	Hospital/research team to select	CP2		
Supervision criteria	Someone who understands GPhC performance standards	DT3		
	Pre-reg must not be left unsupervised by pharmacy	PM5		
Advice giving	Pre-reg should not give advice to staff	PM3		
	Pre-reg cannot give advice in the absence of a pharmacist	NQ17	NQ12	NQ14

5.4.1.2 Placement propositions

Once the design requirements had been established, the researcher worked with the stakeholder groups to determine the design propositions. Fourteen categories were identified from the explorative data regarding placement design propositions:

- Pharmacy assistant
- General pharmacy
- Advanced pharmacy
- Patient-centred activities
- Working with doctors
- Working with nurses
- Ward type criteria
- Training prior to placement

- Personality of the pre-registration pharmacist
- Who could supervise
- Who could not supervise
- Pre-registration pharmacist guidance
- Ward staff guidance
- Knowing the role of the pre-registration pharmacist

An extract from the placement design proposition matrix has been included below. For the full list of design propositions, see appendix 8.

Table 6: Placement propositions (extract from appendix 8).

Proposition subclass	**Proposition**	**Who said so?**				
General Pharmacy	Patient own drug checks	NQ17	CP4	PM5	PM4	
	Clinical pre-screening	CP3				
	Check discharge letters	WP1	DR3	DR1		
Advanced Pharmacy	Antibiotic stewardship	NQ12	NQ15	NS1	WP1	DR5
	Support deprescribing	WP1	NS1	DR1	DR5	
	Challenge consultant decisions	NS1	WP1	DR1	DR5	
Work with doctors	Attend formal teaching with junior doctors	DR1				
	Work in older persons acute/day admissions unit	NS1	DR5			

5.4.1.3 Placement concerns

The concerns surrounding the placement and its design were extensive and varied across all participant groups. Seventeen categories of concerns were identified:

- Generic concerns
- Placement serves no purpose
- Patient care
- Tutor specific concerns
- Learning outcomes
- GPhC
- Supervision
- Ward team
- Advice giving
- GPhC assessment
- Overall pre-registration year
- Understanding of the pre-registration pharmacist's role
- Ward work
- Registration
- Recruitment
- Personality of the pre-registration pharmacist
- Nursing fears

An extract from the placement concerns matrix has been included below in table 7. For the full list of design concerns, see appendix 9.

Table 7: Placement concerns (extract from appendix 9).

Concern subclass	Concern	Who said so?				
General concerns	Pre-reg will lose identity as a pharmacist	PM5				
	Placement will not meet training needs of pre-reg	PM4				
	Reputation of pharmacy damaged if pre-reg makes mistake	PM2	PM5	PM4	CP3	CP4
Patient care	Risk to safety of patient care	PM4	PM2	NQ3	NQ5	PM5
Tutor specific concerns	Tutor uncomfortable leaving pre-reg supervision to nursing or medical teams	PM4				
	Tutor is expected to pick up the evidence produced from the placement	PM5				
Learning outcomes	Outcomes for this placement are not clear	CP3	CP1			
	Pre-reg distracted from achieving their learning outcomes by ward staff	PM5				
GPhC	Placement will turn into a shadowing exercise where the trainee cannot demonstrate competencies	CP3	CP2			
	Pre-reg not able to meet the GPhC performance standards on the ward	PM4	CP3			

Concern subclass	Concern	Who said so?		
Placement serves no purpose	Holistic patient focus doesn't require the pre-reg to be on a ward - rather ethos of pharmacy needs to change	CP3	CP4	CP1
	Why is this placement being done? Not clear what it is trying to achieve	CP3	CP4	
Supervision	No pharmacist supervision will result in pre-reg not learning the right information or how to do the right thing	PM3		
	Pre-reg can't do anything which isn't checked by a pharmacist	CP3		
	Daily oversight of pre-reg is difficult to achieve when they aren't in pharmacy department	CP3		
	How would personality of the pre-reg cope being unsupervised - some would not cope	PM5		
	Worry that other professions would want pharmacists to supervise their pre-registration students	PM2		
	No pharmacist supervision will result in pre-reg doing menial roles	PM2		
	Pharmacy staff too busy to supervise pre-reg on placement	PM5		

5.4.2 Phase 2

5.4.2.1 Placement requirements

Discussing the placement requirements with the stakeholder groups led to the stakeholders identifying the following design requirements:

- Placement to take place in the middle of the pre-registration year.
- An Older Persons Medicine (OPM) ward should host the placement.
- Placement activities must map to the GPhC performance standards.
- Working hours should be the same as pharmacy; Mon-Fri, 9am-5pm.
- Guidance on the role of the pre-registration pharmacist must be determined.
- The placement must have defined learning objectives.

Despite the quantity of data regarding the placement length generated from the explorative discussions, there was no clear recommendation or agreement amongst the stakeholders. Proposed lengths ranged from half a day to six months. Due to the need to determine a placement length at an early stage in the design process, the researcher proposed that the placement length should be a minimum of 13-weeks, in line with the literature surrounding longitudinal placements (Thistlethwaite et al., 2013).

The stakeholder group at hospital 1 accepted a 13-week ward placement. However, hospital 2 rejected the proposal for a 13-week placement and supported a placement for 6-7 weeks in length. After several iterations of the 6-7 week placement had been discussed between the researcher and stakeholders, the evidence supporting 13-week placements was reconsidered and the stakeholders at hospital 2 agreed to a 13-week placement.

5.4.2.2 Placement propositions

Discussing the placement propositions with the stakeholder groups led to the stakeholders identifying the following design propositions:

- Continue to participate in the pharmacy-related activities on the ward e.g. medicines reconciliations.
- Be involved in activities that support patients to manage their medicines e.g. counselling patients.
- Attend multi-disciplinary team meetings (board rounds).
- Attend consultant ward rounds.
- Observe medicines administration rounds.

The design propositions reflected the characteristics of a longitudinal placement. The placement should provide opportunities for pre-registration pharmacists to care for patients, build good working relationships with the ward team and achieve the GPhC performance standards (Poncelet and Hirsh, 2016).

The stakeholder groups determined that pre-registration pharmacists could assess a patient's ability to self-administer medicines and give advice to healthcare professionals, provided a registered pharmacist had checked this where applicable.

Administering medicines, taking blood and clerking patients into the ward, were propositions that were deemed unsuitable for the pre-registration pharmacists during their ward placement.

The placement propositions identified in phase 1 did not include the concept of the trainees gathering feedback on their performance over the course of their placement, although one participant (NQ4) did suggest using a mini peer assessment tool. The researcher (HK) initiated conversations with the stakeholders on the use of workplace assessment tools for pre-registration pharmacists during the ward placement, suggesting they could be redesigned for pre-registration training. The stakeholders supported this idea of incorporating workplace assessment tools into the ward placement.

Over the course of the meetings with the key stakeholders, a placement design began to unfold. At both hospitals, the first placement design listed the activities participants had agreed upon, distributed across a 7-week (appendix 10) or 13-week period (appendix 11). Following further

stakeholder meetings, this design evolved to incorporate a series of learning objectives, a preliminary timetable and more detailed information on activities such as patient observations, board rounds and medicines administration (appendix 12).

The views of the stakeholder group at each hospital were largely similar, the main differences being the length of placement and the responsibilities of the pre-registration pharmacists on the ward. The nurse stakeholder at hospital 1 led discussions on what the responsibilities of the pre-registration pharmacists on the ward should consist of. These discussions did not occur at hospital 2 due to the extensive discussions surrounding placement length.

Following the completion of the stakeholder meetings, the placement design for each hospital was almost identical in nature, with variations only arising as a result of the ward context i.e. some learning opportunities were available at one hospital due to the nature of the placement ward. However, this outline still only provided some of the details necessary for implementing the placement. Other important details had not been finalised and these included:

- Recruitment of the trainees to the placement
- Role boundaries
- Key activities
- Timetable
- Induction

5.4.2.3 Placement concerns

The placement concerns fell broadly into two categories:

1. Concerns relating to what the ward placement design *should not* incorporate.
2. Concerns which *could not* be addressed by the placement design e.g. pre-registration pharmacists losing their identity as a member of the pharmacy team.

Concerns the placement design *should not incorporate*

The researcher made the conscious decision not to share any of the data relating to the placement concerns with the stakeholder groups, as this might hamper design discussions. Rather, the research team revisited the placement concerns related to what the ward placement design *should not* incorporate. This ensured that as discussions with the practitioner stakeholders took place, the design did not incorporate these features.

Concerns regarding whether the ward placement would meet the GPhC requirements and if pre-registration pharmacists would be able to achieve their performance standards on the placement, were addressed through mapping potential outcomes of the placement to the GPhC performance standards (see appendix 13) in order to obtain GPhC approval (appendix 14).

Concerns over the willingness, availability and competence of the ward staff (doctors and nurses) to play a role in the supervision of the pre-registration pharmacists, was extensive in the phase 1 data. Working closely with the practitioner stakeholders helped address some of these concerns, as the nurses and consultant expressed willingness to be involved and were not concerned about limited availability and lack of support for the project.

Concerns the placement design *could not address*

The concerns which the placement design could not address in the design phase largely consisted of fears about ‘the worst case scenario’ from implementing a ward placement. These included concerns such as:

- Some pre-registration pharmacists not coping during the placement.
- Other professions would want pharmacists to supervise their pre-registration students.
- No pharmacist supervision would result in pre-registration pharmacists performing menial roles on the ward.

During the design phase, it was not possible to predict whether these concerns would come to pass. Hence, only through implementing the ward

placement would it be possible to determine if these concerns would be applicable to the ward placement.

5.4.3 Phase 3

At hospital 1, eight stakeholders attended the panel and included: pre-registration pharmacist manager, pre-registration pharmacist, ward sister, ward pharmacist, nurse educator, newly qualified pharmacist (<2 years' experience) and two PPI members.

At hospital 2, twelve stakeholders attended the advisory panel and included; deputy chief pharmacist (also ward pharmacist), pre-registration manager, pre-registration tutor, newly qualified pharmacist (<2 years' experience), pre-registration pharmacist, ward sister, two ward nurses, two deputy sisters and two PPI members.

The results from the hospital 1 advisory panel were presented and agreed upon by the hospital 2 advisory panel, resulting in a longitudinal placement design that was almost identical, with variations only arising from the different ward contexts.

The main design features of the longitudinal ward placement are presented in this chapter, with a full list in appendix 15.

5.4.3.1 Learning outcomes

Learning outcomes were agreed:

- Perform pharmacist ward based clinical activities under supervision.
- Demonstrate effective time-management, prioritisation and organisational skills.
- Demonstrate effective communication and consultation skills with patients.
- Demonstrate effective inter-professional working.
- Apply knowledge in the context of clinical decision-making.
- Critically appraise prescriptions and develop personalised management plans for patients.

- Evaluate own learning experiences during the placement.

5.4.3.2 Preparation prior to placement

Pre-registration tutors should be sufficiently prepared and aware of the placement design and its objectives. Ward staff should expect the pre-registration pharmacist's arrival prior to placement and have an awareness of the placement's design.

The pre-registration pharmacists should have discussions with their tutor prior to commencing the placement about their role, responsibilities and learning outcomes.

5.4.3.3 Recruitment of pre-registration pharmacists to placement

Pre-registration pharmacists would be asked to volunteer for the placement and if more pre-registration pharmacists volunteered than there were available placements, the trainees would be selected randomly.

5.4.3.4 Induction

A one-week induction period on the ward (included in the 13-week timeframe) would be developed and implemented by the ward sisters. Ideas were shared for what the induction week could involve at each hospital and are listed below in table 8.

Table 8: Induction activities.

Activity	**Hospital 1 agreement?**	**Hospital 2 agreement?**
Meet the team	Yes	Yes
Roles of healthcare professionals within the team	Yes	Yes
Overview of working hours and range of activities	Yes	Yes
Supervision and mentoring arrangements	Yes	Yes
Overview of how ward operates	Yes	Yes
Orientation of the ward; location of ward items e.g. equipment, medicines	Yes	Yes
Understand transfer of care issues	Yes	Yes
Patient Observations training	Yes	Yes
Answering the ward telephone	Yes	Yes
Orientation of medical notes	Yes	No
Training on accessing patients' records	Yes	No
Training on viewing pathology results	Yes	No
Training on viewing medical history	Yes	No
Training on what to do when the crash bell goes	N/A	Yes
Orientation of relevant Trust guidelines	N/A	Yes

The reason for not incorporating some of the proposed induction activities at hospital 2 was due to the pre-registration pharmacists having already completed these activities as part of their standard rotational hospital training.

Training on what to do when the crash bell sounded and the orientation of relevant Trust guidelines were not discussed by the panellists at hospital 1, as these ideas were put forward by the panellists at hospital 2.

5.4.3.5 Placement logistics

At hospital 1, the pre-registration pharmacists should conduct their placements sequentially to avoid them being placed on the ward at the same time so that ward staff are not overwhelmed.

The pre-registration pharmacists should have sufficient time to acquaint themselves with the pharmacy staff and department procedures before commencing the ward placement. The timing of the placement within the year should also avoid taking place too close to the registration assessment. Possible start times of November and February for each of the pre-registration pharmacists were proposed.

At hospital 2, pharmacist panellists advocated for the pre-registration pharmacist completing their 'Medicines Information' rotation prior to the placement commencing. A start time of January was agreed upon for the hospital 2 pre-registration pharmacist.

5.4.3.6 Key activities

Specific activities that the pre-registration pharmacists could get involved with on the ward were discussed and grouped into the following categories:

- Medicines management
- Patient observations
- Attendance at board round
- Attendance at medicines administration round
- Attendance at ward rounds
- Implementing Trust guidelines
- Patient-centred discharge planning

The key activities listed in the medicines management category have been included below. For a list of all categories and activities, see appendix 15.

Table 9: Medicines management activity table.

Medicines Management activity	**Hospital 1 agreement?**	**Hospital 2 agreement?**	**Potential Performance Standards Obtained**
Assist ward staff with individual patient ordering of medicines	Yes	Yes	A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A4.1-A4.8 A5.1-A5.7 B1.1-B1.12 B2.1-B2.9 C1.9 C1.11-C1.12 C2.1-C2.9 C2.11
Completing Patient Own Drug checks and Medicines Reconciliation for patients	Yes	Yes	
Dealing with medication supply queries	Yes	Yes	
Assisting ward staff in achieving medicines management audit outcomes	Yes	Yes	
Support ward staff to monitor therapeutic drug levels for specified patients and drugs	Yes	Yes	
Update the patient whiteboard with TTO status	Yes	No - electronic board	

During the advisory panel, participants suggested groups of key activities which were missing from this list that included:

- Working in the day assessment unit.
- Patient counselling.
- Patient's self-administration of medicines.
- Responding to medicines information queries.

- An ‘other’ category of opportunistic activities that did not fit into one of the above activity groups.

All of these activities were added to the placement design. The patient and public involvement members on the panel were receptive to pre-registration pharmacists supporting patients to self-administer their medicines.

5.4.3.7 Responsibilities

In phase 2, the practitioner stakeholders identified that determining the responsibilities of the pre-registration pharmacists was important. The researcher compiled the information from these discussions to present two categories of responsibilities to the panellists. The independent chair invited panellists to comment and reach agreement on each responsibility. A full list of responsibilities can be found in appendix 16. Table 10 provides an extract of responsibilities.

Table 10: Examples of pre-registration pharmacist responsibilities during the placement.

Responsibility	Decision	Hospital 1 agreement?	Hospital 2 agreement?
Making beds	Not a routine expectation, but trainees could assist healthcare assistants if the ward is busy.	Yes	Yes
Washing patients	Trainees should be aware of how patients are washed but should not be actively involved in washing patients.	Yes	Yes
Walk patients to the toilet	Trainees should not escort patients to the toilet independently but should find a relevant member of staff to assist.	Yes	Yes
Talk to patients about medicines	Trainees should have holistic discussions with patients about their medicines that go beyond the medication history and discharge counselling.	Yes	Yes
Dispense urgent medicines	Trainees should assist the ward to facilitate urgent discharges which may include dispensing items in main pharmacy. These items should still be checked by a pharmacist.	Yes	Yes
Discharge planning	Trainees should assist with managing discharges, ensuring patients have enough medicines and liaising with the ward pharmacist.	Yes	Yes
Ensure patients have enough to drink/are eating	Trainees should not assist patients with food but can provide patients with drinks.	Yes	Yes
Mobilising patients and role if patients fall	Trainees should have an awareness of and should know who to call for in the event of a patient falling.	Yes	Yes

5.4.3.8 Workplace assessment tools

Six workplace assessment tools were proposed to the panels:

1. Mini Clinical Evaluation Exercise (Mini-CEX).
2. Direct Observed Procedure (DOP).
3. Consultation Observation Tool (COT).
4. Intervention Recording (IR).
5. Case Based Discussion (CBD).
6. Mini Peer Assessment Tool (Mini-PAT).

Concerns were raised about the over-assessment of the pre-registration pharmacists, since they already have to complete ‘competency assessments’ that require them to perform certain technical activities. This was particularly relevant when discussing the ‘Direct Observation of Procedure’ (DOP) tool, which was viewed as a duplication of the already existing competency assessments used at hospital 1. Therefore, the DOP tool was removed as a possible workplace assessment tool to include as part of the placement.

5.4.3.9 Proposed timetable

Panellists agreed that the proposed placement timetable (see table 11) was appropriate given that the responsibilities evolved over time to become more complex in nature (NB: This is not the final placement timetable – the final table can be found in 7.3.2.2).

Table 11: Proposed placement timetable.

Activity undertaken	*Prior to Placement*	Week 1	*Week 2-3*	*Week 4-5*	*Week 6-7*	*Week 8-9*	*Week 9-10*	*Week 11-12*	*Week 13*
Learning agreement	Develop plan								
Pharmacy Activities; POD, MR, Ordering	Achieved competency	Conducts independently referring to ward pharmacist when necessary							
Discharge Planning	Achieved competency	Utilises Medicines Management skills to support staff with patient discharges				Review clinical discharge summaries (amending where necessary), conducting discharge counselling			
Ward Induction		Induction							
Patient Observations		Training	Conduct observations						
Pharmaceutical care planning		Training and practice			Implementation to support ward pharmacist				
Board rounds			Attendance and Observation			Contributes if appropriate			
Medicines administration			Observation		Training	Support nurse to administer medicines			
Self-administration of Medicines Assessment			Observation and practice		Competency assessment	Conducts assessments independently; liaising with primary care providers on discharge			
Patient Counselling			Orientation from ward pharmacist where trainee will receive training and opportunity to practice			Competency assessment for patient counselling; conduct independently			
Consultant ward round			Attendance and Observation; supporting medical team and communicating with pharmacist						
Responding to staff and patient MI queries			Practice and implement responses under ward pharmacist supervision						
Guidelines implementation	Familiarisation with relevant guidelines		Training and practice		Implement - supervised	Implementation independently			
Work in the day assessment unit			Observation and Training		Practice under supervision	Work under supervision of healthcare professional to assist with clerk-in patients			
Audit					Identification of audit topic and completion of audit data collection and write-up				Present ation
Opportunistic									
Additional activities	Attend doctor training	Work long days	Work weekend		Patient handovers	Work with specialist teams		Observe procedures	

5.4.3.10 Implementation

The placement design would be communicated to the pre-registration pharmacists, their tutors and the ward staff via a workbook. Prior to the placement commencing, meetings would be arranged with these individuals and the researcher. These meetings would involve distributing the workbook, explaining the placement and providing a final opportunity for participants to ask any questions before the longitudinal placement study commenced.

5.5 Discussion

5.5.1 Main findings

This chapter has described how a pragmatic approach to designing a ward placement for hospital pre-registration pharmacists was carried out using the methodological principles of DBR (McKenney and Reeves, 2012d; Morgan, 2014).

A longitudinal 13-week placement design was developed during practitioner stakeholder meetings and at multi-disciplinary stakeholder advisory panels. The design at both hospitals was for the most part identical, with minor adaptations only arising due to specific aspects of patient care that took place on one ward but not the other. The placement design involved pre-registration pharmacists participating in medicines management activities, observing the medicines administration process, attending board rounds and consultant ward rounds. The responsibilities of the pre-registration pharmacists during the placement were outlined and included them talking to patients about their medicines and supporting the discharge process.

The placement would be implemented on Older Persons Medicine (OPM) wards, in the middle of the hospital pre-registration year. The working hours of the pre-registration pharmacists during the placement would reflect the opening hours of their respective pharmacy department, so that there were pharmacists available to support. Learning outcomes and a timetable were developed to support the trainees manage themselves during the placement.

A series of workplace assessment tools were developed to encourage the pre-registration pharmacists to gather feedback on their performance. The placement design would be implemented via a workbook and through meetings with the pre-registration pharmacists, their tutors and the ward staff.

5.5.2 Strengths and limitations

The additional role of the researcher (HK) as designer of the placement enabled her to participate in discussions with the practitioner stakeholders regarding the placement design. This allowed her to update the placement design in ‘real-time’ and ensure that the research aim and objectives were met.

The researcher as designer of the placement may be considered a limitation of this research. Her presence may have influenced the decisions of practitioner stakeholders regarding the design of the placement. Indeed, the researcher made several suggestions regarding the design of the placement. Namely the placement length, the use of a workbook and workplace assessment tools.

The researcher had extensive knowledge of the literature and learning theory, which could enhance the placement design. During the design process, researchers should not impose their own beliefs regarding the intervention design onto practitioner stakeholders (Reeves, 2005; Wang and Hannafin, 2005; Getenet, 2019). However, decision-making during the design process will often involve trade-offs between what is theoretically the ideal and what is practical to deliver (McKenney and Reeves, 2012d). Ideally, the researcher would not have put forward any suggestions for the placement design to the stakeholder groups. Yet, this did not present a practical solution to achieving the aim and objectives of this study. In order to account for the researcher’s suggestions, they were discussed extensively with the practitioner stakeholders and agreed upon before being incorporated into the ward placement design.

The practitioner stakeholder meetings took place 6-9 months prior to the ward placement commencing, hence there was a long lead-in time to prepare for the implementation of the placement. This enabled the placement to undergo multiple draft designs and allowed the stakeholders to discuss, reflect and change their minds at various stages of the design process without feeling under pressure. However, it is worth considering that not all interventions will have such a long lead-in time, hence may not be able to undergo as many alterations and revisions.

Challenges were encountered when recruiting doctors to participate in stakeholder meetings and at the advisory panels. This was due to the doctors working on the proposed placement wards being unable to leave the ward/clinic to attend these meetings. Only when evaluating the implementation of the ward placement will it be possible to determine if the absence of a doctor's input into the placement design at hospital 1 affected the placement in any way.

A small number of participants were involved in determining the placement design. Hence, their perspectives on what a ward placement for pre-registration pharmacists should include may not be generalisable to other hospitals and pre-registration pharmacist training programmes. However, at this stage, this study did not intend for the ward placement design to be generalisable to every hospital context or pre-registration training programme, rather it was intended to be specific for the context of the hospital wards and training programmes in this study.

5.5.3 The DBR approach

The thematic analysis carried out in Chapter 4 failed to identify the placement design requirements and propositions needed to inform its design. This study confirmed that higher level coding of data generated from thematic analysis does not support the design of complex interventions.

The framework method was used successfully to identify the placement design requirements and propositions from the qualitative data. This indicates that the framework method could be applied by other design-based

researchers to identify intervention design requirements and propositions (Gale *et al.*, 2013).

During the collation of the design requirements and propositions, an additional set of codes relating to concerns participants raised in the explorative phase were identified. Some concerns appeared to be based on individuals 'worst fears' about the placement, rather than on anything which the placement design could specifically address.

Other concerns related to possible consequences of the ward placement that could be prevented through careful design. For example, concerns raised over whether the GPhC would approve of the placement led the research team to acquire accreditation from the GPhC for the longitudinal placement. This involved mapping the activities of the placement to the GPhC performance standards. This reassured the pharmacist participants that the placement design was appropriate. These concerns were useful for 'checking' the design of the placement as it progressed.

The identification and use of participants' concerns regarding the design and implementation of an intervention has not been previously described in the DBR literature. Concerns raised by participants could enhance the design of an intervention and warrants further investigation as a part of the design and construction phase of the DBR approach.

5.5.4 Stakeholder input into the design

Practitioner stakeholder input as a part of the DBR approach is important for improving the ability of the intervention design to be implemented successfully in the practice setting. During the phase 2 stakeholder meetings, the practitioners appeared to become more invested in the placement and began to assume more responsibility for identifying solutions to the problems they identified. Since the stakeholders were assuming more ownership over the placement, this may enhance their motivation to implement the placement effectively. Only through evaluating the ward placement will it be possible to determine if the practitioners involved in

designing the placement were more motivated to ensure its implementation was successful.

5.5.5 Design features

In phase 2, the length of the placement – 13 weeks – was suggested by the researcher in the absence of agreement in the explorative data and amongst stakeholder participants. Whilst having the researcher propose the placement length was not theoretically ideal, it was a practical solution to the challenge faced by the stakeholders of determining the placement length. Medical education literature identifies that longitudinal placements which are a minimum of 13-weeks provide an enhanced learning experience compared to short placements (Thistlethwaite *et al.*, 2013).

Clear learning outcomes, guidance and structure of the placement were design requirements identified in phase 1. During phase 2, stakeholders discussed these features at length and were keen to ensure the placement had sufficient guidance as to enable effective implementation, but not so much that the placement became constrained by it. Communities of practice theory recommends that training programmes retain a certain degree of flexibility to allow learners to explore learning opportunities which are of interest to them in the social setting (Wenger, 1998). It was therefore pertinent that the placement design, communicated through the workbook, should emphasise the flexible nature of the design.

During the advisory panels, the ward sisters volunteered to arrange a week of induction activities that would involve the pre-registration pharmacists spending time with different members of staff and learning about their roles. This formal element of the placement design may enable the ward sisters to informally act as ‘brokers’ for the pre-registration pharmacists and support their integration onto the ward.

Key activities pre-registration pharmacists could participate in during the placement were grouped into categories including: medicines management, the board round, the medicines administration round and the consultant ward round. The majority of activities proposed involved the pre-registration

pharmacists working with nursing or medical staff. These activities set the ward placement apart from traditional rotational ward placements where in the main, the pre-registration pharmacist's time would be spent with the pharmacist conducting only medicines-related activities. The stakeholders set a new precedent for pre-registration pharmacist training in designing a ward placement that involved opportunities for learning and working alongside nurses and doctors in an integrated manner.

Communities of practice emphasises that learning takes place during social interactions, particularly when those interactions occur between experienced members of the community and newcomers (Wenger, 1998). Since pre-registration pharmacists would be newcomers to the ward, opportunities for them to participate in activities with experienced members of the ward team may enhance their learning experience during the placement.

Communities of practice highlights the need for responsibilities and activities to be relevant to the future practice of the learner (Wenger, 1998). In phase 3, the responsibilities of the pre-registration pharmacists during the placement were prioritised according to the future practice of the trainees as hospital pharmacists. Other activities that involved providing the more personal aspects of patients' care were deemed inappropriate for the pre-registration pharmacists to be carrying out.

A series of workplace assessment tools were developed by the researcher to support the trainees to gather feedback and reflect on their experiences. Experiential learning theory highlights that reflecting on one's experiences are an important part of learning, hence the workplace assessment tools may enhance the learning experience of the pre-registration pharmacists (Kolb, 1984).

5.5.6 Summary

This study utilised the DBR approach successfully to develop a ward placement design that was acceptable to practitioner stakeholders from different disciplines at both hospitals. The design is underpinned by learning theory, informed by the literature and has involved practitioner stakeholders

at all levels of the design process to improve its chance of being implemented successfully.

A 13-week longitudinal ward placement as part of hospital pre-registration pharmacist training represents a substantial shift away from the standard 1-3 week ward rotations usually experienced by pre-registration pharmacists. Hence, in order to ensure that the placement design was feasible and appropriate, a prototype placement should be tested initially (McKenney and Reeves, 2018c). The following chapter describes the evaluation of a prototype ward placement for a pre-registration pharmacist.

Chapter 6 Prototype Implementation and Evaluation

6.1 Introduction

Chapter 5 described the process of designing the ward placement. Key features of the placement design such as the length (13-weeks), timing (middle of the pre-registration year) and activities pre-registration pharmacists could participate in (e.g. consultant ward rounds) were determined.

Concerns regarding the introduction of a ward placement were also identified, which included:

- The placement could pose a risk to patient care.
- The pre-registration tutor would be uncomfortable leaving the pre-registration pharmacist to work under the supervision of nursing or medical teams.
- The pre-registration pharmacist would not be able to meet the GPhC performance standards during the placement.

Where possible, the research team tried to address the concerns raised, for example obtaining GPhC approval for the placement and working closely with nurses and doctors to design the placement. However, it was not possible to address all concerns raised in the design stage, since the placement needed implementing to determine if the concerns would be realised.

This chapter describes the implementation and evaluation of a prototype ward placement for a pre-registration pharmacist at hospital 1.

6.1.1 Design-based research: Prototyping

A prototype is a smaller version of the intervention, is intentionally not full-scale and is often developed to test just certain elements of the intervention. It is not possible for all the small details of an education intervention to be determined in the planning stages, hence prototypes can be useful to help clarify certain aspects of the design; what works, what doesn't and what needs to be improved (McKenney and Reeves, 2012d; Wensveen and Matthews, 2014).

Prototypes built by multi-disciplinary teams that include practitioners are often designed and implemented more successfully. This is because practitioners help to ensure the design is both feasible and achievable in the context it will be implemented in. Prototyping may be carried out in successive phases and may be used to ascertain why the intervention works in a particular context and what characteristics are essential or non-essential to the design of the intervention (McKenney, 2001; McKenney and Reeves, 2012d).

Evaluating an educational intervention often involves identifying ways to improve the intervention and assessing its overall value. Often, it is not possible to ascertain all the ways in which an intervention can be improved and what its overall value is through just one evaluation. Therefore, the different phases of an evaluation may be separated depending on what the focus of the research question is at each stage of the intervention's implementation (McKenney and Reeves, 2018d).

When carrying out an evaluation on a prototype, or intended intervention, alpha testing may be conducted. Alpha testing concerns the soundness and feasibility of the intervention design. Studies which utilise alpha testing seek to determine how the design is implemented through exploring the application of the design requirements and propositions (soundness). The cost of implementing the intervention may also be explored and could include establishing the potential financial, emotional and human resource costs involved in its implementation (feasibility) (McKenney and Reeves, 2018d).

Alpha testing explores what (if any) changes need to be made to the intervention design or the way it is implemented. Results from alpha testing may reveal the need for redesign of certain elements of the intervention and any changes must be carried out swiftly and documented clearly (McKenney and Reeves, 2012d).

This study sought to evaluate a 4-week prototype pre-registration pharmacist ward placement. The aim and objectives of the research were aligned with the principles of alpha testing the prototype in order to establish the feasibility of the design.

6.2 Aim and Objectives

Aim:

Evaluate how key design features of the prototype placement were implemented in practice.

Objectives:

- Establish whether the placement's design features were suitable for the purposes of pre-registration pharmacists' training.
- Identify areas for placement redesign.

6.3 Methods

6.3.1 Ethical approval

Ethical approval (service evaluation) for this study was obtained from University of East Anglia Research and Ethics Committee (see appendix 17) reference number 2017/2018 132. Local approval for this service evaluation to be carried out was provided by the deputy chief pharmacist at hospital 1 (appendix 18).

6.3.2 Prototype Design

6.3.2.1 Ward context

It is important that in design-based research, the local context is described in sufficient detail to enable the reader to draw conclusions about the applicability of the research findings to their own local context (McKenney, Nieveen and Van den Akker, 2006).

Hospital 1 is a large district general hospital. The ward pharmacy service is divided into teams, who work within five specialties; acute admissions, medicine, surgery, oncology/haematology and older people's medicine. Pharmacists and technicians are allocated to a particular team, who then provide services to specific wards allocated to them by the lead team pharmacist. Pharmacists and technicians may be required to cover several

wards on the same day. The teams are often comprised of senior and junior pharmacists with some technician support. Wards that care for patients with more complex needs, or wards with a higher turnover of patients, are more likely to have a senior pharmacist and technician allocated.

The ward where the pre-registration pharmacist longitudinal placement (and therefore the prototype placement) could be held was suggested by the deputy chief pharmacist at hospital 1, citing a positive relationship between the pharmacy and the ward as the primary rationale for selecting this ward. The placement ward was an Older Patients Medical (OPM) ward with 28 acute beds, both male and female. The ward was staffed by two consultants and a range of junior doctors graded from FY1 to registrar. The ward was managed by a sister who was supported by three deputy sisters and seventeen registered staff nurses, covering night and day shifts. The ward also had a discharge coordinator, ward clerk, physiotherapists and occupational therapists who worked regularly on the ward.

The pharmacist who had been regularly covering the ward was on maternity leave, resulting in the ward being covered by a variety of other pharmacists. When the prototype placement commenced, one pharmacist, who was also the pre-registration tutor, volunteered to work as the ward pharmacist for the duration of the prototype placement. Dedicated ward pharmacist cover was approximately two hours each morning. In the afternoons, one pharmacist (usually junior) would cover the prototype placement ward and three other OPM wards. This pharmacist held a phone for the ward nurses/doctors to make contact if they needed medicines, discharge prescriptions or answers to medicine queries.

The placement ward regularly hosted sixth form students and students from the nursing, medical, occupational therapy and physiotherapy professions. The ward leadership team, comprising the consultants and sister, had been established on the ward for several years.

6.3.2.2 Prototype placement design

A 4-week prototype placement was developed in collaboration with stakeholders (pre-registration pharmacist, pre-registration tutor and ward sister) at hospital 1 (see table 12 for the timetable). One meeting was held between the researcher and these stakeholders to discuss the design and implementation of the prototype placement.

During this meeting, the design for the longitudinal placement was presented and decisions were made about what would be incorporated into the prototype placement. It was agreed that the 1-week induction arranged by the ward sister would be implemented and the following three weeks would involve the pre-registration pharmacist testing all but one of the key design features of the longitudinal placement – the audit.

The researcher amended the timetable accordingly and developed a workbook to support the placement (see appendix 19). The workbook contained the placement timetable and suggested activities. The intention of the workbook was to communicate the placement design in a practical and useful way to the pre-registration pharmacist and ward staff.

The prototype placement was held in July i.e. the final month of a pre-registration pharmacist's training year, after the registration assessment. The pre-registration pharmacist worked on the ward on Monday to Friday; 9am-5pm with no other pharmacy departmental responsibilities such as dispensing or checking slots. The pre-registration tutor was present on the ward for approximately three hours each day to support the pre-registration pharmacist and available via the phone when not based on the ward. The additional hour of pharmacist support available during the prototype placement was provided to incorporate teaching and learning opportunities for the pre-registration pharmacist.

Table 12: Prototype placement timetable

Activity undertaken	***Prior to Placement***	***Week 1***	***Week 2***	***Week 3***	***Week 4***
Introductions to ward staff and development of learning plan	Learning agreement				
Pharmacy Activities; POD, MR, Ordering	Achieved competency	Conducts independently referring to ward pharmacist when necessary			
Discharge Planning	Achieved competency	Utilises Medicines Management skills to support ward pharmacist and nursing staff with patient discharges.			
Ward Induction		Induction			
Patient Observations		Training	Conduct observations independently		
Board rounds			Attendance and reporting to ward pharmacist		
Medicines administration			Observation at lunchtime rounds		Observe OM/PM round
Self-administration of Medicines Assessment			Observation and practice		
Patient Counselling			Practice patient counselling using evidence tools to support development		
Consultant ward round			Attendance and Observation; supporting medical team and communicating with ward pharmacist		
Responding to staff and patient Medicines information queries			Practice and implement responses under ward pharmacist supervision where applicable		
Guidelines implementation e.g. Antibiotic Stewardship	Familiarisation with relevant guidelines		Training and practice with ward pharmacist		Implementation
Work in the day assessment unit			Training from staff in day assessment unit		Perform pharmacist duties in the unit
Opportunistic					
Additional activities	Attend junior doctor training	Work long day	Work in ED	Patient handovers e.g. General all-purpose handover with medical and nursing staff	Work with specialist teams

6.3.3 Reflexivity

The researcher's reflexive account from this study is included below:

June 2018

Prior to the prototype placement commencing, I was still quite uncertain about how the placement would be implemented on a day-to-day basis. I did not know if the pre-registration pharmacist would be supported by the ward team or viewed as an inconvenience.

I wanted the prototype placement to work well. I was confident that the placement design was as thorough and detailed as it could possibly be, prior to implementation.

6.3.4 Study design

Due to the need to capture rich detailed descriptions of potential amendments to the placement design as part of alpha testing, qualitative research methods were used during this study.

The research team identified that the individuals who would be able to provide rich data regarding the finer details of the prototype placement, would be the pre-registration pharmacist, pre-registration tutor (also the ward pharmacist) and the ward sister. These individuals were invited, via email, by the researcher (HK) to participate in the evaluation since these individuals were well-known to the researcher. A participant information sheet and consent form were provided (appendix 20).

Following the completion of the prototype placement, the pre-registration pharmacist was invited to participate in a face-to-face interview with the researcher (HK). The tutor and ward sister were invited to participate in a focus group with the researcher.

6.3.4.1 Data collection

The researcher conducted the interview and the focus group in a meeting room at hospital 1. Prior to the interview/focus group commencing, the

researcher emphasised the importance of gathering an honest and constructive account from each of the participants, of what happened during the placement. A semi-structured topic guide (appendices 21 and 22) explored:

- The participants' experience of the prototype placement.
- How the workbook was utilised.
- The supervision arrangements.
- How the pre-registration pharmacist interacted with ward staff.

The interview and focus group were audio-recorded. Written informed consent obtained prior to recording commencing. Participants were aware they were being audio-recorded for the purposes of research and that their identity would be anonymised.

The researcher transferred the audio-recordings from the devices to the university computer, stored them in a password protected folder and deleted the recordings from the devices. The consent forms were locked in a filing cabinet in an office with restricted access.

6.3.4.2 Data analysis

The audio recordings were transcribed verbatim by the researcher; participant anonymity was preserved during the process. NVivo QSR International (version 11) was used to store and manage the data.

The Framework Method was applied to the data(Gale *et al.*, 2013). The framework was developed using the key features of the placement design. Initial codes and the participants' corresponding ID were coded into the relevant design feature. A Microsoft Word® table was used to organise the data.

An inductive thematic analysis, following the six-step method was undertaken on the data (Braun and Clarke, 2006). Coding and theme generation was undertaken by the researcher (HK) whose work was checked by another member of the research team (JS).

6.3.4.3 Validation strategies

This study used five validation strategies to confirm trustworthiness of the data: reflexivity, triangulation, rich descriptions, collaborating with participants and peer review.

The researcher's reflexive account highlights that she was aware of her own perspectives, which had partially been influenced by the collaboration with participants on the prototype placement design. The data could be triangulated through gathering thick rich descriptions from different participants during data collection and this analysis was checked by another member of the research team (JS).

The remaining five validation strategies (disconfirming evidence, member checking, prolonged engagement in the field, external audits) were not used to confirm trustworthiness in the data.

Due to the small numbers of participants in this study, it was not possible to generate disconfirming evidence. Similarly, due to the short nature of the intervention (4-weeks) a prolonged period of engagement in the field was not viable.

Member checking and external audits were not carried out on the data. This level of validation of the data would have meant going beyond what would be expected during alpha testing.

6.4 Results

Three individuals were recruited to this study; the pre-registration pharmacist (PP), pre-registration pharmacist tutor (also ward pharmacist) (PT) and ward sister (WS) at hospital 1.

6.4.1 Framework analysis

The framework matrix is presented in table 13. The analytical framework is shaded in grey and results presented in the left-hand column, with the researcher's recommendations for the design of the longitudinal placement described in the right hand column.

Table 13: Framework analysis

Result	Recommendation for design
Ward induction	
During induction, PP: • Attended consultant ward round (PP). • Spent time with an infection control nurse (PP). • Visited a microbiology lab, only useful if interested in microbiology (PP). PP might not have needed a whole week of induction but appeared to enjoy it (WS). Longitudinal pre-registration pharmacists could spend more time with physiotherapists (PP).	Consultant ward round and spending time with the infection control nurse to remain as part of the ward induction. Spending time in the microbiology lab will be removed from future ward inductions. Induction to remain 1-week long. Incorporate spending time with the physiotherapy team in the ward induction.
Pharmacy activities; POD, MR, ordering	
PP could not balance learning on the ward with being responsible for carrying out all the pharmacy activities without support from a pharmacist (PP). Ideally, the longitudinal pre-registration pharmacists should be signed off on doing medicines reconciliations (MRs) prior to commencing their placement, but if they are not that could be a good thing, as it will prevent the trainee from being used to perform these tasks (PP).	Placement design continues to emphasise that the ward pharmacist provides the essential pharmacy service to the ward. Placement design modified to include verbal communication to pre-registration tutors that where possible, the pre-registration pharmacists should have completed their 'ward-based pharmacy competencies'.
Discharge planning	
PP involvement in patient discharges meant there were fewer failed discharges (WS).	The placement design should continue to incorporate discharge planning as one of the main activities pre-registration pharmacists carry out.

Patient observations	
Observed patient observations taking place by healthcare assistants – did not perform any independently (PP).	Placement design should be modified to remove pre-registration pharmacists conducting patient observations independently and be replaced with observation only.
Board rounds	
PP attended the board round every morning, which was useful for him and ward staff (WS).	Placement design should continue to include daily attendance in board rounds.
Medicines administration	
PP observed some medicines administration, PEG tube, oral, IV – it was good to get an idea of how the different types of administration are carried out (PP).	Placement design should continue to incorporate pre-registration pharmacists observing different types of administration such as PEG, IV, TPN, NG, as well as oral.
Self-administration of medicines - patient assessment	
PP was not involved in assessing patients to determine if they would be able to self-administer their medicines as he was too busy with other pharmacy responsibilities on the ward (PP).	Placement design should continue to incorporate pre-registration pharmacists supporting patients to self-administer their medicines where possible.
Patient counselling	
PP did not counsel patients directly, but worked to ensure all the relevant information was communicated on the discharge letter. PP acknowledged that he could have got more involved in counselling patients (PP).	Placement design modified to emphasise ward pharmacist support required to enable pre-registration pharmacists to counsel patients.

Consultant ward round	
Attended consultant ward rounds most days (PP). Consultants were not asking many questions of PP during the ward rounds as they were not fully aware of what the role of a pre-registration pharmacist is (PP).	Consultant ward rounds to remain part of the placement design. Placement design modified to include verbal communication to pre-registration tutors regarding the role of the pre-registration pharmacist being communicated to the consultants.
Responding to staff and patient medicines information queries	
PP did not receive many staff or patient medication queries during the placement (PP).	Responding to medication queries to remain a part of the placement design.
Guidelines implementation e.g. antibiotic stewardship	
PP would locate and share relevant swallowing difficulties and other relevant trust guidance with staff (PP).	Placement design modified to include the recommendation that where possible, the 'Medicines Information' rotation should take place prior to the ward placement commencing. Since, this is not a feature of the longitudinal placement design as such, this should be communicated verbally to the pre-registration tutors.
Work in the day assessment unit	
PP did lots of MRs on patients admitted to the day assessment unit (WS). Spoke to consultants, physios, occupational therapists in the day assessment unit (PP).	Working in the day assessment unit to continue as part of the ward placement and interprofessional working continue to be encouraged.
Ward type	
Ward is the right place to host the longitudinal placement due to its calm environment under the leadership of WS (PT).	The longitudinal ward placement will continue to be hosted on the prototype placement ward at hospital 1.

Additional activities	
Therapeutic drug level monitoring – not many patients who needed this, so PP did not get involved (PP). PP attended a panel review (medicines-related meeting) with the ward sister (WS). PP supported WS to complete mandatory medicines-related audits (WS).	Therapeutic drug monitoring to remain a part of the 'additional activities' aspect of the placement design. Continue to incorporate medicines-related meetings which the ward sister attends, as part of the 'additional activities' section. Continue to include pre-registration pharmacist supporting medicines-related audits on the ward, such as the antibiotic audit.
Supervision arrangements	
PP would liaise with WS each morning and discuss his plan for the day with her, she would provide additional guidance where necessary (WS). Longitudinal pre-registration pharmacists will need more pharmacist supervision at the start, which should then decrease over time (PT).	Daily oversight of the pre-registration pharmacist by the ward sister, to remain in the placement design. Placement design modified to include verbal communication to pre-registration tutors implementing ward placements that ward pharmacist support is required more at the start of the placement, decreasing over time.
Workbook	
The workbook was used by PP and WS during the placement (WS). A typical working day and top tips on working with the ward team could be incorporated into the workbook (PP). The workbook was proportional to what was needed for the placement (PT).	The workbook will continue to be the medium through which the placement design is communicated. The workbook will be amended to include information on a typical working day and top tips on working with the ward team. The format of the workbook will remain unchanged.

Workplace assessment tools	
Useful for achieving evidence that is not just reflective, the checkboxes for meeting performance standards are good (PP). Uncertain of which workplace tool to apply in different situations (PP). The tools were used with doctors and nurses who were able to provide feedback but did not feel able to tick off the relevant performance standards (PP).	No modifications necessary to the format of the workplace assessment tools. Additional guidance will need to be included as part of the placement design on when the different tools should be used. Workplace assessment tools guidance, will continue to recommend the tools can be completed by non-pharmacy healthcare professionals.
Support	
Ward sister was very supportive of PP. However, she may lack awareness of the trainee's competence to perform medicines management activities (PP). PT was always available to PP when needed (WS). Ward pharmacist is going to need to be hands-on for the first few weeks of the placement, they cannot just "drop in, do stuff, leave" (PP). PP was not always supported by other pharmacists in the department (WS). Pharmacy department short staffing affected the amount of support PP received (PP).	Placement design will continue to have the ward pharmacist retaining responsibility for checking and oversight of the pre-registration pharmacist's medicines-related competence. Placement design will continue to have a contactable ward pharmacist. Placement design will continue to have a ward pharmacist who spends sufficient time supporting the development of the pre-registration pharmacist. Placement design modified to include verbal communication to pre-registration tutors regarding the role of the pre-registration pharmacist being communicated to the whole pharmacy team. Not possible to amend the placement design to account for short staffing, but where possible, short staffing should not affect the support the pre-registration pharmacists receive.

Role of the pre-registration pharmacist	
Longitudinal pre-registration pharmacists must be supernumerary on the ward (PP).	The placement design will continue to recommend that the pre-registration pharmacists are supernumerary during the ward placement.
Other	
The progression of activities on the ward should be gradual and the longitudinal pre-registration pharmacists should not be given too much responsibility at the start (PP). PP was not involved in making patient beds (WS).	The placement design will continue to reflect a gradual progression in responsibility for the pre-registration pharmacists. The placement design will continue to recommend that pre-registration pharmacists are not involved in making beds and washing patients.

6.4.2 Thematic analysis

Six themes were identified from the thematic analysis; orientation, description, part of the team, behaviour, outcomes and recommendations. The table below presents each of the themes and associated subthemes.

Table 14: Themes and subthemes for thematic analysis of the prototype placement.

Theme	Subtheme
Orientation	-
Description	Daily routine
	Board rounds
	Activities
	Challenges
	Pharmacist presence
Part of the team	-
Professional socialisation	-
Outcomes	-
Recommendations	-

In this chapter, only the orientation, part of the team and outcomes themes will be presented to avoid duplication. This is due to there being substantial overlap between the other themes and the results presented in the framework analysis.

6.4.2.1 Orientation

The orientation theme describes the routine of pharmacists working on the placement ward prior to the implementation of the prototype placement. Pharmacists working on the placement ward worked in isolation from other members of ward staff and were not considered part of the ward team. It concerned the sister that pharmacists often appeared intentionally withdrawn from the ward team.

"…Normal ward pharmacist will never answer the phone. Phone's ringing in front of them, they will let it ring because they wouldn't know [who to give it to]" WS

The absence of a dedicated ward pharmacist working on the ward in the afternoons to fulfil discharge prescriptions affected patients who were often delayed leaving the hospital as they were waiting for their medicines. When pharmacists did come to work on the ward, they spent most of their time working at the computer (NB: hospital 1 does not have electronic prescribing).

6.4.2.2 Part of the team

The importance of a good working relationship between the ward pharmacist and the trainee was emphasised; the trainee needed to be comfortable both asking the ward pharmacist questions and for additional support when they needed it. Over the course of the placement, trust was built between the pharmacist and the trainee, which led to them being given more responsibilities.

"… pre-reg is… one of those you can trust and…can delegate to and…gets on with everything" PT

The ward sister described how through participating in the prototype placement, she could now understand the vision and the rationale behind training pre-registration pharmacists on the ward, so that they could become a part of the multi-disciplinary team.

"…at the beginning when I came into this [project] I didn't understand at all what it was all about….now I can see [and understand]…I am sure at the other end [of the longitudinal placement] we will hopefully have another [PP] who will be able to work on a ward, have good skills, be able to see how a ward runs and that the MDT [multi-disciplinary team] of a ward is pivotal for it all to function…" WS

Participants gave many examples and accounts of how the pre-registration pharmacist had become a part of the ward team and how this affected the

working practices of the staff, ultimately benefitting the patients through a safer and more efficient discharge process.

"…[pre-registration pharmacist] being part of the team made, I think, the best part of it [prototype placement] all" WS

Attending the board round enabled the pre-registration pharmacist to build a picture of the order of discharges and gather medical and social information regarding the patient. As the placement progressed, the pre-registration pharmacist built good working relationships with the consultants and junior doctors which led to more dialogue surrounding each patient's medicines.

"…[ward consultant] on the board round, if there's a medicine thing he'll ask about it, turn to [pre-reg pharmacist]. [Pre-reg pharmacist] will say 'I'll look at that' and…they've quite bonded actually" SN

The pre-registration pharmacist joined in with the social activities of the ward, even acquiring a fond nickname from the staff. He interacted well with the ward staff, made an effort to get to know everybody and had been cheerful. This was evidenced by the pre-registration pharmacist answering the ward phone and not sitting at a computer.

"…He answers the telephone, phone's ringing, he'll answer the phone…he can take it to the [ward clerk] he knows who people are now doesn't he? That's made the difference..." WS

6.4.2.3 Outcomes

The pre-registration pharmacist went the 'extra mile' for the patients on the ward through facilitating discharges to happen in a timely manner, speaking to relatives, liaising with social workers and suggesting alternative formulations for patients. The pre-registration pharmacist developed a better understanding of complex discharges and how a pharmacist can support this process.

"…Psychiatrists wanted us to do [covert administration of medicines for a patient]…we don't have a…very good policy here…and [pre-registration pharmacist] said 'well why don't we try elixirs, then we can still use normal

medicines in elixirs?'…he [PP] went the extra [mile] to get her [patient's] drugs in her…that's something that if we had pharmacy only popping in to the ward we wouldn't have [found that solution]…" WS

The evolution of the pre-registration pharmacist from trainee to healthcare professional left the ward pharmacist feeling superfluous to the ward. The outcome which was the most beneficial to the ward staff, was having an accessible member of pharmacy staff on the ward all day, to address medicines-related queries, process orders and facilitate patient discharges. Ultimately, this led to the ward wanting to retain the pre-registration pharmacist as their regular ward pharmacist once he had qualified.

"…I've asked to keep him…[PP] should be allocated to [ward] forevermore as my ward pharmacist…" WS

The prototype placement resulted in the ward sister acquiring an understanding of how to manage the placement and how to explain the role of the pre-registration pharmacist to their staff; namely referring to him as the equivalent of a third-year nursing student. She also acknowledged that PP joined the ward at a much later stage in his training and that the longitudinal placement trainees would be working on the ward from a much earlier point and so would need more support from the staff.

"this [longitudinal placement] is gonna be new…to my girls [staff nurses] cos they'll all expect a [PP] won't they? Their expectations will be high so I just…on my huddles [ward meetings] is explaining that…" WS

6.5 Discussion

6.5.1 Main findings

The prototype placement was implemented as the design intended and the analysis established that the placement's design was suitable for the purposes of pre-registration pharmacist training. Areas for placement redesign were identified and included: patient observations, induction activities and additional guidance for the workplace assessment tools.

The selected placement ward was described as being “the right ward” to host the longitudinal placement and the workbook was appropriate for the placement. The supervision arrangements between the pre-registration tutor and ward sister worked effectively and the pre-registration pharmacist was able to contribute to improving patient care.

These results indicate that the design of the ward placement is sound and appropriate. Benefits for patients, the ward team and pre-registration pharmacists were identified. Therefore, the design for the 13-week longitudinal placement for hospital pre-registration pharmacists should progress to the next phase; implementation.

6.5.2 Strengths and limitations

This study only involved one pre-registration pharmacist conducting a 4-week prototype placement on one hospital ward. It is therefore small-scale, only collecting data from three participants – all of whom were involved in the design of the prototype placement, which was extensive. This may have enabled the participants to implement the placement more successfully since they had expert knowledge of the placement and were committed to the project. The results generated may reflect the extensive preparatory design work that was undertaken and social desirability bias of the participants. Therefore, the results may not be generalisable to other settings where the participants have not participated to the same extent in the preparations of the intervention prototype. However, the purpose of this study was not to generate data that would be generalisable to other settings. Rather, the purpose of alpha testing the prototype intervention was to evaluate how the placement was implemented, establish whether the design was suitable and identify areas for placement redesign.

The study aim and objectives were met, with only minor modifications identified for placement redesign. However, since all three participants were involved in the design, this may have affected their ability and/or willingness to criticise the placement to the researcher. The researcher endeavoured to account for this at the start of the interview/focus group by emphasising the need for honest reflective accounts from the participants.

The use of thematic and framework analysis to evaluate the data, strengthened the study since the results enable the reader to recognise design modifications easily whilst also providing the wider context of what took place during the prototype placement, revealing the positive effect that it had on patient care. Five validation strategies (reflexivity, triangulation, rich descriptions, collaborating with participants and peer review) were used to confirm trustworthiness of the data generated, demonstrating the strengths of the methods used to collect and analyse the data.

Incorporating a 4-week placement at the end of a pre-registration training programme is not exceptionally different to what happens in standard rotational programmes where the trainee is often allocated their own ward to manage towards the end of their training year. Additionally, 4-week rotations through ward areas are not uncommon for some hospital pre-registration training programmes. The prototype placement failed to test two of the most important design features of the longitudinal ward placement, the length of time and place within the middle of the pre-registration year. Prototypes are intentionally small-scale versions of the main intervention; hence a 4-week prototype placement was appropriate for this stage of testing. Ideally, the prototype placement would have been implemented in the middle of the pre-registration pharmacist's training year. However, this was not possible within the timeframe available, so implementation of the longitudinal 13-week ward placement will need to be conducted to determine the effect of these design features.

The evaluation of the ward placement did not explore the feasibility of the prototype placement, the financial, emotional and human resource cost associated with implementing the placement. However, since pre-registration pharmacists are salaried, there was no perceived financial cost associated with the introduction of the ward placement. Whilst the costs of the emotional and human resource effort were not explored in full, there appeared to have been some human resource cost associated with implementing the placement; namely the supervision time of the healthcare professionals. However, it appeared that this was more than repaid in full, since the

pre-registration pharmacist was able to contribute to patient care on the ward.

6.5.3 Design features

The analysis established that the placement design was suitable for the purposes of pre-registration pharmacist training. Prior concerns, such as patient care being compromised, ineffective supervision and an inability to meet GPhC performance standards, were not realised during the prototype placement. This suggests these views may be unfounded. However, this study was small-scale and of limited duration, so it is not possible to draw definitive conclusions.

Communities of practice indicates that it takes time for an individual to become a member and that being able to contribute to the practice of the community is an important step towards full membership (Wenger, 1998). Over the course of the prototype placement, the pre-registration pharmacist was able to use his knowledge and skills to support the discharge process in a way that was different to a traditional ward pharmacist. The pre-registration pharmacist's knowledge and relationship with the ward team gave him access to the ward's shared repertoire. Regular attendance at board rounds and consultant ward rounds enabled the trainee to participate in activities that encouraged mutual engagement. This culminated in him being able to better understand the joint enterprise of the ward and contribute to it – namely through supporting patient discharges. The pre-registration pharmacist appeared to become a member of the ward team quickly, which may not reflect reality. His fast-track journey to membership could reflect the prior relationship he had with the ward sister from participating in the prototype placement design discussions and that he was able to be incredibly useful to the ward as he was at the very end of his pre-registration year. It was also apparent that the ward pharmacist service prior to the prototype placement had been insufficient to meet the demands of the workload. Hence, ward staff were more welcoming and motivated to incorporate the pre-registration pharmacist as part of the ward team, since he brought valuable resource and skill to their workforce.

Features of the placement design that enabled the pre-registration pharmacist to build relationships with the ward staff included, the ward induction, the board round and the consultant ward round. It was important that the doctors were aware of the pre-registration pharmacist's role during these activities and could ask questions of the trainee.

The ward sister designed and managed the ward induction, which included opportunities for the pre-registration pharmacist to spend time with other staff members, learn their names and observe how the ward worked. The ward induction appeared to be an effective way to facilitate the brokering role of the ward sister.

Whilst it would be useful for the ward staff (particularly the pharmacist) if the pre-registration pharmacists were signed-off on all their pharmacy-related ward competencies prior to the placement, it could result in the trainee performing all of these tasks and not accessing learning opportunities on the ward. Hence, maintaining the supernumerary status of the pre-registration pharmacist is important during the placement. The ward pharmacist should continue to provide the main pharmacy service to the ward, ensuring that the pre-registration pharmacists are able to access other learning opportunities, such as the consultant ward round.

Notably, the need for effective pharmacist supervision at the start of the prototype placement was described. This enabled the trainee to take advantage of other activities such as attending the consultant ward rounds. Situated learning theory highlights the importance of the 'master' in training the 'apprentice' in their trade, through legitimate peripheral participation (Lave and Wenger, 1991). Therefore, in order for pre-registration pharmacists to gain the most experience from ward placements, the ward pharmacists will need to provide ongoing support and supervision.

The ward sister and pre-registration tutor had a good working relationship, describing how they would check-in with one another regularly to discuss the pre-registration pharmacist's progress. The supervisory model appeared to function well with the ward sister assuming responsibility for the daily activities of the pre-registration pharmacist on the ward and the

pre-registration tutor assuming responsibility for the training aspects of the pre-registration pharmacist's role. It was difficult for the ward sister to judge the competence of the pre-registration pharmacist when he was carrying out pharmacy responsibilities on the ward. This indicates that the pharmacist will need to retain overall responsibility for oversight of the pre-registration pharmacists' activities.

The workplace assessment tools were used by the pre-registration pharmacist with the pre-registration tutor, doctors and nurses. The trainee found the tools useful and the format user-friendly. However, the need for better guidance on when and in which situations to use the tools was recommended. Additionally, doctors and nurses did not feel able to comment on whether the pre-registration pharmacist had met the relevant GPhC performance standards. Hence, the ward pharmacist may be the most appropriate member of staff for pre-registration pharmacists to conduct workplace assessment tools with.

Patient observations were intended to be an activity that the pre-registration pharmacist would conduct independently. However, the prototype placement revealed that conducting patient observations on patients independently was not appropriate and that this activity should remain the responsibility of the nursing team. The longitudinal ward placement design will need to be modified to reflect this finding.

The pre-registration pharmacist was not able to experience all of the design features of the prototype placement within the 4-week period. Activities which could not be fully experienced included: patient counselling, implementing Trust guidelines, working in the day assessment unit, patient's self-administration of medicines, responding to medicine information queries and additional activities. Each of these features should be incorporated as part of the longitudinal placement and their inclusion in future placement designs determined thereafter.

The evaluation of the prototype placement revealed improvements that would need to be made to the longitudinal placement design. Many of these improvements were small and often consisted of better communication

between the ward pharmacist/pharmacy department and the doctors and nurses, such as explaining the role of the pre-registration pharmacist to the ward consultants. It is important that these minor improvements are not overlooked and appropriate ways to communicate these are initiated. This is due to the fact that it is unlikely this information could be incorporated into the placement workbook.

6.5.4 Summary

The prototype placement established that the design features were suitable for the purposes of pre-registration pharmacists' training and also identified areas for redesign. The placement was implemented as intended and recommendations for the longitudinal ward placement were provided.

This prototype demonstrated that introducing a ward placement during the hospital pre-registration year is possible and is likely to have advantages for trainees. Therefore, the intervention should progress to the next phase; implementation of the 13-week longitudinal ward placement.

Chapter 7 Longitudinal placement Implementation and Evaluation

7.1 Introduction

Chapter 6 described the implementation of a 4-week prototype placement on an Older Persons Medicine (OPM) ward at hospital 1. Alpha testing was undertaken on the prototype placement to establish whether any revisions to the design of the placement were needed. The following suggestions for redesigning certain elements of the placement included:

- Ward induction activities to reflect the practice of the trainee on the ward.
- Patient observations conducted by the trainees alongside healthcare assistants or nurses.
- Additional information regarding the use of workplace assessment tools.

The prototype placement identified that the design of the 13-week longitudinal placement was appropriate for pre-registration pharmacist training and should be implemented. This chapter describes the implementation and evaluation of a 13-week longitudinal ward placement for three hospital pre-registration pharmacists.

7.1.1 Design-based research: Evaluation and reflection

The evaluation and reflection phase of DBR involves evaluating the intervention in order to generate data to inform the next iterative version of the intervention. Theoretical insights and refinements, to the intervention's design propositions, may be identified to support the ongoing development of the intervention (McKenney and Reeves, 2018d).

Evaluations of interventions often consist of identifying ways to improve the intervention and its overall value. The six foci, which are essential to the evaluation of educational design research, include: *soundness, feasibility, local viability, institutionalisation, effectiveness* and *impact*. It is not necessary for an evaluation to explore every focus and it is not appropriate to test all of these at once in the same study. Rather, studies should focus on

evaluating different foci at different stages of intervention development (McKenney and Reeves, 2018d).

The different stages of intervention development are:

1. Alpha testing - initial intentions (design) of the intervention.
2. Beta testing - how the intervention is implemented in practice.
3. Gamma testing - what the outputs/effects are.

Each stage of the intervention development requires the evaluation to focus on identifying certain points. Alpha testing concerns the design's initial intentions with the focus of the research questions centred on establishing the *soundness* and *feasibility* of the intervention. Beta testing explores how an intervention is implemented in practice, the research questions focus on the *local viability* and *institutionalisation* of the intervention. Gamma testing concentrates on the *effectiveness* and *impact* of the intervention's outputs (McKenney and Reeves, 2018d).

The evaluation of the prototype ward placement (chapter 6) explored the soundness of the ward placement, establishing that the proposed placement design was suitable for the purposes of pre-registration pharmacist training and the design requirements and propositions were appropriate.

When an intervention is operating as the design intended, beta testing is used to focus the research aim and objectives on exploring the intervention's local viability and institutionalisation. An intervention's local viability refers to how and why it is able to survive in the research context. This involves exploring whether the intervention was implemented as designed (fidelity) or whether the participants changed the way they implemented it (adaptations). Institutionalisation describes how an intervention can become incorporated as part of the organisation's practice. Participants may be asked to comment on the replicability of the intervention's implementation across other settings (McKenney and Reeves, 2018d).

Beta testing also explores the concept of 'tolerance' which describes how precisely specific elements (design requirements/propositions) of the intervention need to be implemented for the intervention to meet its

outcomes. If an intervention has a high tolerance this means the design does not need to be implemented with a high degree of accuracy to ensure the same outcomes. If however, an intervention has a low tolerance, in order for it to meet its outcomes; the design needs to be implemented according to its specification. Therefore, it is important that testing of specific design requirements/propositions of the intervention is carried out in multiple settings to explore which of them have a high or low tolerance (McKenney and Reeves, 2018d).

Gamma testing refers to attainment and is used to determine both the effectiveness and impact of the intervention i.e. the degree to which the intervention is meeting its objectives and producing the desired change in the real-life context. However, it is not possible to determine the true effectiveness and impact of an intervention if it has not been fully developed and implemented in different settings (McKenney and Reeves, 2018d).

Since this study involves evaluating the implementation of the 13-week longitudinal ward placement for hospital pre-registration pharmacists, the focus of the evaluation should be beta testing. The placement's local viability and institutionalisation should be where the research questions are directed. Whilst these may be the central point of the evaluation, it does not exclude the gathering of data on the soundness and feasibility of the longitudinal placement (alpha testing) or the effectiveness and impact (gamma testing) as these will help inform the local viability and institutionalisation.

7.2 Aim and objectives

Aim:

Evaluate the implementation of the longitudinal ward placement, investigating how and why the placement endured and produce recommendations for its establishment in hospital pre-registration pharmacist training programmes.

Objectives:

1. Describe the placement as delivered: which design features were implemented, how they were implemented, whether they were adapted and if not implemented, explore reasons why.
2. Investigate how the placement survived on the ward and why (local viability).
3. Explore how the placement might become a part of pre-registration pharmacist training in these hospitals and other organisations (institutionalisation).

7.3 Method

7.3.1 Ethical approval

Ethical approval for this study was obtained from the University of East Anglia Research and Ethics Committee (see appendix 23) and governance approval from the Health Research Authority (see appendix 24). Please be aware that information that could lead to the identification of participants has been redacted from these approvals.

7.3.2 Placement Design

7.3.2.1 Context

A description of where an intervention is taking place must be produced in detail to enable the reader to draw conclusions about the applicability of the research findings to their own local context (McKenney, Nieveen and Van den Akker, 2006).

Information regarding the context of hospital 1 can be found in section 6.3.2.1.

Hospital 2 is a large teaching hospital. The ward pharmacy service is tailored to the needs of the ward, resulting in some wards having ward pharmacy cover Monday to Friday, 9am-5pm whereas others have 2-hourly visits. Most wards receive pharmacy technician support; this ranges from Monday to

Friday, 9am-5pm, daily visits or three times per week. Pharmacy technician duties include both medicines reconciliation and medicines management.

The ward hosting the longitudinal placement was suggested by the deputy chief pharmacist, who was also the ward pharmacist. He described the already established positive relationship with the senior nursing staff and consultants as one of the drivers for proposing this ward.

The placement ward was an OPM ward, specialising in the care of older patients who had undergone operations, most frequently, for hip fractures. The ward comprised of 39 beds and patient's care was managed by three consultants and five junior doctors. The ward was managed by one ward sister who was supported by a team of deputy sisters and registered staff nurses. Other staff included: a discharge coordinator, ward clerk, specialist nurse, physiotherapists and occupational therapists.

Ward pharmacist cover was provided by the same pharmacist who spent approximately 2 hours on the ward each day. When not based directly on the ward, he was always available, via the phone, to the pre-registration pharmacist. There was no pharmacy technician support during the longitudinal placement.

7.3.2.2 Design

All three pre-registration pharmacists were allocated to work on the OPM placement ward Monday-Friday; 9am-5pm. The pre-registration pharmacists still attended pharmacy departmental pre-registration training during their longitudinal placement and continued their two-weekly meetings with their pre-registration tutors. They did not undertake any dispensary slots during the placement. All the pre-registration pharmacists had a 1-week induction period on the ward, arranged by the ward sisters.

The final placement design, including the timetable (table 15), a list of roles and responsibilities, suggested activities and workplace assessment tools were provided to the trainees and staff in the form of a workbook (appendix 25).

To facilitate the implementation of the placement, a practice management team at both hospitals was established, consisting of the:

- Deputy chief pharmacist
- Pre-registration manager
- Pre-registration tutor
- Ward sister
- Ward geriatrician

Their collective role was to:

- Ensure that the day-to-day running and management of the placement was maintained.
- Safeguard the learning needs of the pre-registration pharmacist.
- Uphold the safety of patients and staff.
- Implement the placement in a safe and constructive way.
- Meet informally to update one another on the pre-registration pharmacist's progress and development.

Table 15: Longitudinal placement design

Activity undertaken	**Prior to Placement**	**Induction**	***Week 2-3***	***Week 4-5***	***Week 6-7***	***Week 8-9***	***Week 10-11***	***Week 12-13***
Learning agreement	Develop plan			Review plan			Review plan	
Pharmacy Activities; POD, MR, Ordering		Work towards achieving competencies			Conducts independently referring to ward pharmacist when necessary			
Discharge Planning			Utilises Medicines Management skills and works with pharmacist to support staff with patient discharges			Practise discharge letter proofing		Competency for discharge letters
Patient Observations			Observe observations by ward staff					
Pharmaceutical care planning			Training and practice		Implementation to support ward pharmacist			
Board rounds			Attendance and Observation, updates patient list			Contributes if appropriate		
Medicines administration			Observation of oral medicines administration		Observation of IV medicines administration		Support administration & attendance at morning administration round	
Self-administration of Medicines Assessment			Observation and practise with pharmacist			Conducts assessments independently, liaising with primary care providers on discharge		
Patient Counselling			Orientation from ward pharmacist where pre-reg will receive training and opportunity to practise			Completion of evidence tools to support development of consultation skills		
Consultant ward round			Attendance and Observation; supporting medical team and communicating with pharmacist					
Responding to staff and patient MI queries			Practise and implement responses under ward pharmacist supervision; completing Evidence Tools to support learning					
Guidelines implementation e.g. Antibiotic Stewardship			Familiarisation with relevant guidelines		Training and practise		Implementation with support from ward pharmacist	
Work in the day assessment unit				Observation and Training		Work under supervision of healthcare professional to assist with caring for patients		
Audit			Identification of audit topic		Audit data collection		Write-up	Presentation

7.2.2.2 Recruitment to the longitudinal placement

Recruitment of pre-registration pharmacists to each hospital was undertaken at a national level through the ORIEL system with neither the hospitals nor the research team having any direct involvement in their selection.

Prior to commencing their training, all pre-registration pharmacists at both hospitals were informed about the longitudinal ward placement. Upon commencing their training, information sessions were held for the pre-registration pharmacists by the researcher. At hospital 2, a further information session was held by the ward. Following this, pre-registration pharmacists were invited to volunteer to participate in the longitudinal ward placement. Two pre-registration pharmacists at hospital 1 and one pre-registration pharmacist at hospital 2 volunteered.

The researcher (HK) held a further information session with all three volunteer pre-registration pharmacists. This session provided information about the research process and the placement design. During the session, the pre-registration pharmacists were told that they could ‘opt-out’ of the longitudinal placement at any point and return to the rotational training model.

The pre-registration pharmacists undertaking the longitudinal ward placement, received the same Trust induction and pre-registration tutor support as the non-longitudinal placement pre-registration pharmacists at both hospitals. Table 16 provides some information regarding the pre-registration pharmacists who participated in the study.

Table 16: Pre-registration pharmacist placement information.

Pre-registration pharmacist	Code	Hospital	Weeks placement undertaken
Pre-registration pharmacist A	PRA	1	14-26
Pre-registration pharmacist B	PRB	2	23-35
Pre-registration pharmacist C	PRC	1	27-40

7.3.3 Reflexivity

DBR studies frequently engage the same person as designer, facilitator, researcher and evaluator (McKenney and Reeves, 2018d). In the early stages of developing and evaluating an intervention, it is advisable that researchers undertake these multiple roles as they are able to learn from and with participants as the intervention unfolds. The researchers will hear about problems, adaptations and recommendations firsthand from the participants, which can have a greater impact on the intervention redesign than an external evaluator (Nieveen and Folmer, 2013).

Therefore, having the same individual perform all of these roles can be advantageous as it provides opportunities for 'live redesign', resulting in faster changes to the intervention and improved understanding for the researcher (McKenney and Reeves, 2018d).

However, the risk of bias influencing the study findings is substantial as the likelihood of participants giving socially desirable feedback, when they know the designer is also the evaluator, is enhanced (McKenney and Reeves, 2018d).

Triangulation, early stage formative evaluations and reflexive accounts may help to mitigate some of this. The researcher should clearly describe their role and involvement in the practice context, discussing any potential

influence they may have had on the data (Nieveen and Folmer, 2013; McKenney and Reeves, 2018d). Below is the researcher's reflexive account:

September 2018

Bouyed by the positive experience of the pre-registration pharmacist in the prototype placement, I was hopeful that the longitudinal placement would yield similar results. I was uncertain of exactly how the placement would function day-to-day, especially when the trainees were at a much earlier stage in their pre-registration year. However, I was convinced that we had done as much work as possible to prepare for the placement and was optimistic that the placement would be well received by the trainees and ward staff.

During the design and prototype phases, I built good working relationships with the pharmacy staff, senior nursing staff and consultants on the placement wards at both hospitals. I was aware that their input into the design and implementation of the longitudinal placement may affect their objectivity and willingness to provide honest critical feedback on the placement. Therefore, I knew that during data collection, I would need to encourage the participants to be completely honest with me about their opinions and experiences of the placement. I would also have to remain objective during the evaluation, assuming the role of researcher – rather than designer or facilitator.

I was aware that when it came to analysing the data, I would need to work thoroughly and carefully to ensure that my interpretations of the data were as objective as possible. Hence, I spent a great deal of time researching and designing my approach to data analysis in order to ensure trustworthiness.

7.3.4 Intervening

During DBR studies, the researcher may have to intervene in the design and/or implementation of the study during data collection. These interventions give the researcher the opportunity to unlock the learning potential that arises from such events, ultimately contributing to an enhanced

theoretical understanding (Cobb and Bowers, 1999; Barab and Squire, 2004).

Intervening in research studies in this way draws criticism as the researcher is believed to be ‘contaminating’ the research environment. Design-based researchers argue that these interventions produce helpful models to apply to other contexts in the future and are a necessary part of the process (Cobb and Bowers, 1999; Barab and Squire, 2004).

Since the longitudinal placement was being implemented in the ‘real-life’ setting, it was necessary for the research team to build in contingency plans, should the researcher need to intervene during the research. The following plan was devised:

During data collection, if the researcher (HK) became aware of any practice which could be unsafe for trainees, staff or patients, she would first report this to the research team. The research team would then advise whether the practice team at either or both hospitals need be informed of any changes that need to be made to the placement design or implementation.

7.3.5 Study design

In order to achieve the research aim and objectives of this study, the pragmatic philosophical approach explains that the methods used to collect and analyse data should be selected based on their ability to achieve these (Morgan, 2014; R. Johnson and Christensen, 2014a; McKenney and Reeves, 2018d).

The first time an intervention is implemented, it should be evaluated both early-on in the process and frequently (McKenney and Reeves, 2018d). Qualitative longitudinal research enables interventions to be studied frequently as it involves collecting data from the same participants over two or more time points, with sufficient time intervals in-between, to have allowed a change to occur. This enables participants to reflect on their experiences, describe changes that are happening in ‘real time’ and predict what their experiences might be in the future (Neale, 2019a).

Qualitative longitudinal research studies often involve small numbers of participants who are interviewed within a modest timeframe. This generates rich data which connects time to change, enabling participants to 'rewrite' their narrative as they journey through the intervention (Holland and Thomson, 2009; Neale, 2019a).

The research team identified that since the pre-registration pharmacists were the ones experiencing the ward placement, they were the people best placed to describe changes happening in 'real-time'. Hence, the pre-registration pharmacists were interviewed four times over the course of this study.

In order to triangulate the experiences of the pre-registration pharmacists during the ward placement, gathering data from other individuals, such as the ward staff and pre-registration tutors, would allow multiple perspectives to be explored and improve the validity of the findings (Lincoln and Guba, 1985; Creswell and Poth, 2017c; McKenney and Reeves, 2018d). Since the ward staff and pre-registration tutors were not themselves experiencing the intervention, it was not appropriate to apply qualitative longitudinal research methods to these participants. Hence, ward staff and pre-registration tutors were interviewed once as part of this study.

7.3.5.1 Inclusion criteria

With respect to the 13-week longitudinal ward placement at hospitals 1 and 2, individuals must have fulfilled one of the following inclusion criteria:

1. Participating pre-registration pharmacist in the longitudinal ward placement, OR
2. Pre-registration pharmacist tutor (educational supervisor) of the participating pre-registration pharmacist, OR
3. Staff member located on a participating ward, with sufficient day-to-day proximity with the pre-registration pharmacist, to be able to comment on their performance and integration.

7.3.5.2 Recruitment

On behalf of the researcher, gatekeepers (deputy chief pharmacists at hospitals 1 and 2) emailed participant information sheets (appendices 26 and 27) and consent forms (appendix 28), at least one week prior to the interview taking place to potential participants meeting the inclusion criteria. Potential participants interested in taking part, responded directly to the researcher (HK) stating their availability to participate. A mutually convenient time was arranged for the interview.

Some participants were interviewed more than once at hospital 1 as there were two pre-registration pharmacists completing their longitudinal placement on the same ward. Once participants had completed their first interview, the researcher obtained their consent to contact them directly regarding a subsequent interview.

7.3.5.3 Data collection

Pre-registration pharmacists

The pre-registration pharmacists were interviewed four times over the course of the placement:

- Prior to placement commencing (week 0).
- Week 3/4/5.
- Week 7/8.
- After placement finished (week 14).

A fifth interview was planned, as part of the research design, to occur following the end of the pre-registration year, but this did not take place. This was due to the large quantity of data amassed from the first four interviews. The research team determined that there would be little value-added from conducting a fifth interview with each trainee.

A semi-structured topic guide was used at all interviews. The topic guide used during the week 0 interview (appendix 29) included the following discussion areas:

- Why the participant chose to do a pharmacy degree.
- Reason(s) for volunteering for the longitudinal placement.
- Prior work experience.

The topic guide used during subsequent interviews (appendix 30) included the following elements for discussion:

- The trainee's interactions with the ward staff.
- Activities undertaken.
- Learning experiences.

Following each interview, the topic guide was modified slightly to enable the researcher to follow-up on topics discussed at previous interviews. This helped ensure consistency with the topics discussed between the pre-registration pharmacists and allowed the researcher to revisit emerging topics as the pre-registration pharmacist progressed through their placement.

Pre-registration tutors

The pre-registration tutors were interviewed once per trainee at week 14 (appendix 31). The discussion points included:

- Support and supervisory arrangements for the pre-registration pharmacist.
- Resources such as the workbook and workplace assessment tools.
- Development of the pre-registration pharmacist.

Staff

The ward staff were interviewed once per trainee at week 14 (appendix 32). The discussion points included:

- The staff member's interactions with the pre-registration pharmacist.
- The working practices of the staff members and whether these changed as a result of the pre-registration pharmacist's presence on the ward.
- Activities the pre-registration pharmacist undertook with the staff member.

Remuneration

Remuneration for staff time was made to the relevant hospital trust (£25 per participant per interview).

Data management

The interviews took place in private meeting rooms located within the hospitals in normal working hours and were audio-recorded using two recording devices. Informed written consent was obtained prior to recording. Interviews with pre-registration pharmacists were transcribed verbatim by the researcher; interviews with ward staff were transcribed verbatim by the researcher and an administrative assistant at the UEA whose role it is to transcribe. All identifying data such as names were anonymised during the transcription phase. Another member of the research team (JS) read the first few interview transcripts and provided feedback and guidance to the researcher (HK) on how to improve her interview technique.

Consent forms were securely stored at UEA in a locked filing cabinet in an office with restricted access. Audio recordings were downloaded onto a secure password protected UEA computer and then deleted from the recording device. Participant's personal data was destroyed following the end of this PhD. Research data will be destroyed after 10 years of research publication as per university policy. Principles of the Data Protection Act 2018 were followed with respect to data storage, processing, and destruction.

Non-longitudinal placement pre-registration pharmacists

Following the completion of the longitudinal placements, the deputy chief pharmacists at both hospitals expressed a desire for a focus group to be conducted with the pre-registration pharmacists who had not completed the longitudinal placement and had undertaken the usual short block rotations as part of pre-registration training. The researcher (HK) obtained ethical approval and conducted these focus groups. However, these results have not been included in this thesis since this data does not satisfy the aim and objectives of the study.

7.3.5.4 Analysing longitudinal data

Due to the added dimension of time in qualitative longitudinal research studies, the analysis is more complex. Capturing change over time in the analysis of qualitative longitudinal data can be challenging.

This process of analysing qualitative longitudinal data is not well described in the literature (Grossoehme and Lipstein, 2016; Neale, 2019b). There are no strict rules to follow when conducting qualitative longitudinal analysis (Neale, 2019b). The longitudinal data generated by the pre-registration pharmacists over the course of their four interviews requires an analytical approach that is bespoke and designed to ensure the aim and objectives of the research can be achieved.

Therefore, the process of analysis described in this study is unique and was developed to ensure that readers can be confident the data presented is trustworthy. A pragmatic approach underpinned the development of this method of analysis, which drew upon the principles of trajectory analysis, framework analysis and abductive analysis (Gale *et al.*, 2013; Tavory and Timmermans, 2014b; Grossoehme and Lipstein, 2016).

7.3.5.4.1 Trajectory analysis

Grossoeheme (2016)., identified that qualitative longitudinal research studies may be analysed using a recurrent cross-sectional or trajectory approach. Recurrent cross-sectional analyses focus on a change over time of the entire study sample at different time points. Trajectory analysis focuses on the personal experiences of the change over time of one person or a small group.

In research that intends to compare the effect of an intervention at two separate time points, cross-sectional analyses would be preferred. When research aims to explore the experiences or processes of the change over time, with emphasis on the individual journey, the trajectory approach would be more appropriate. The research aim and objectives are used to determine whether a cross-sectional, trajectory or a combination of the two approaches

should be used to analyse the data generated (Grossoehme and Lipstein, 2016).

Since this study sought to evaluate the individual experience of each pre-registration pharmacist during the longitudinal placement, a trajectory approach should be applied to the data.

Trajectory analysis involves two phases:

Phase 1: Coding and organising of the data by time e.g. week 0.

Phase 2: Coding and organising of the data by case
e.g. Pre-registration pharmacist A (PRA).

Framework analysis may be applied to the longitudinal data to facilitate its organisation in the trajectory approach (Grossoehme and Lipstein, 2016).

7.3.5.4.2 Framework analysis

Framework analysis is recommended for analysing longitudinal qualitative data and generating results which contribute to the theoretical field (Gale *et al.*, 2013; Grossoehme and Lipstein, 2016; McKenney and Reeves, 2018b).

Framework analysis involves creating a framework which coded data are sorted into. A deductive, inductive or abductive approach may be used to carry out framework analysis (Gale *et al.*, 2013; Tavory and Timmermans, 2014b).

Framework analysis using a deductive approach involves the research team creating a framework. The framework is created before coding and organising the data begins and is therefore, predetermined. The content of the framework is informed by the aim and objectives, the literature and theory. Once the framework is complete, the data is coded and organised into the sections within the framework. The deductive approach is useful when the research team have a clear idea of what they need to identify from the data to answer the research question. However, the deductive approach to designing a framework can fail to identify emerging themes within the data, restricting the potential for the results to contribute to the field (Gale *et al.*, 2013).

Framework analysis using an inductive approach involves undertaking coding on a few transcripts. These codes are grouped into categories and themes. These themes determine the framework. This framework is then applied to the remaining transcripts. These remaining transcripts are coded and the data organised into this framework (Gale *et al.*, 2013). The inductive approach to framework analysis is useful for strengthening or challenging established theories or findings elsewhere in the field (Tavory and Timmermans, 2014b). However, inductive approaches often involve the researcher approaching the research area with potentially little understanding of the theoretical field. This can have consequences for data analysis, since researchers cannot identify which data is 'surprising' or posit why this might be so. This may prevent research findings from contributing to the wider field (Tavory and Timmermans, 2014a).

The deductive and inductive approaches have advantages and disadvantages. Importantly, neither of them lead to the creation of new theories, as they do not promote creative thinking, which a design-based research approach advocates (Barab and Squire, 2004; Tavory and Timmermans, 2014b). Therefore, it is necessary to identify an approach to framework analysis that achieves the research aim and objectives and contributes to the field of learning theory.

The pragmatic philosophical notion of 'abduction' (an innovative process focussed on using unexpected research findings to develop new hypotheses and theories) has been developed into a methodological approach known as 'abductive analysis'. Through applying methods which allow researchers to identify and theorise about why 'surprising' research data has emerged, abductive analysis supports theory refinement and construction, thus enabling research data to contribute to the theoretical field (Tavory and Timmermans, 2014b, 2014c, 2014a).

There is not a singular prescriptive method for conducting abductive analysis. The principles of revisiting the data, de-familiarising the data and alternative casing should be applied to methods to enable theory refinement and construction (Timmermans and Tavory, 2012). To conduct abductive

analysis successfully, the research design must link to multiple theories and also provide the opportunity for 'surprising' 'unexpected' and 'negative cases' to emerge (Timmermans and Tavory, 2012).

This study sought to apply the principles of abductive analysis to the data. To achieve this, a framework was first created, which would allow both the trajectory and abductive approaches to data analysis to be conducted.

7.3.5.4.3 The framework: phase 1

The first phase of trajectory analysis involves the coding and organising of the data by time. A coding tree was created in NVivo QSR International (version 12) to analyse the data. Four '1st order nodes' were created for each of the time-points the data was collected from the pre-registration pharmacists:

- Week 0
- Week 3/4/5
- Week 7/8
- Week 14

To create the '2nd order nodes', the principles of abductive analysis were drawn upon. The research aim and objectives were used to inform the '2nd order nodes', whilst also leaving room to explore 'surprising data'. The following coding tree was created:

- Week 0
    - Implementation (objective 1)
    - Local viability (objective 2)
    - Institutionalisation (objective 3)
    - 'Surprising' data (which does not fit into one of the other nodes)
- Week 3/4/5
    - Implementation
    - Local viability
    - Institutionalisation
    - 'Surprising' data

- Week 7/8
    - Implementation
    - Local viability
    - Institutionalisation
    - ‘Surprising’ data
- Week 14
    - Implementation
    - Local viability
    - Institutionalisation
    - ‘Surprising’ data

7.3.5.4.3.1 Data analysis

Once the coding tree was established, the process of analysing each interview transcript began. PRA’s transcripts were analysed first, followed by PRB and PRC. The steps below describe the process of analysing the data:

Step 1: Initial coding.

Sections of the transcript are assigned codes which are descriptions of the key piece of information contained within that quote from the transcript.

An example quote from pre-registration pharmacist A during her week 3 interview is provided below:

“…my favourite moment [is] watching all the drug rounds…seeing patients that can’t swallow…and watching them [nurses] crush them [tablets] and …watching someone administer insulin…this is a good learning moment…”A3

This quote was given the code: *A3. Drug rounds.*

The code ‘A3. Drug rounds’ tells the researcher that the quotes present in this code belong to pre-registration pharmacist A and were collected at the week 3 interview.

Step 2: Sort code into framework.

The codes are sorted into the framework. The code: *A3. Drug rounds* was sorted into the node *Implementation.* In the coding tree in NVivo, this would appear as such:

- Week 3/4/5
    - Implementation
        - A3. Drug rounds

Repeat: This process was repeated until all twelve pre-registration pharmacist transcripts had been coded and the codes sorted into the framework.

7.3.5.4.4 The framework: phase 2

The second phase of trajectory analysis involves the coding and organising of the data by case, i.e. by pre-registration pharmacist. Another coding tree was created in NVivo QSR International (version 12) to analyse the data. Three '1st order nodes' were created for each of the pre-registration pharmacists in this study:

- PRA
- PRB
- PRC

The '2nd order nodes' were intentionally identical to the '2nd order nodes' in the first coding tree, since the research aim was the same. Hence, this coding tree was created:

- PRA
    - Implementation
    - Local viability
    - Institutionalisation
    - 'Surprising' data
- PRB
    - Implementation
    - Local viability
    - Institutionalisation

    - ‘Surprising’ data
- PRC
    - Implementation
    - Local viability
    - Institutionalisation
    - ‘Surprising’ data

7.3.5.4.4.1 Data analysis

Once the second coding tree was established, the process of organising the data into the framework began. The codes generated from the initial coding process undertaken as part of the analysis under the first coding tree were not changed. The codes and their corresponding quotes were copied and pasted from the first coding tree into the second coding tree.

Step 3: Identify code from first coding tree.

The example code is identified from the first coding tree: *A3. Drug rounds.*

- Week 3/4/5
    - Implementation
        - A3. Drug rounds

The node ‘A3. Drug rounds’ is copied from the first coding tree.

Step 4: Identify the correct place to insert the code into the second coding tree.

The code ‘A3. Drug rounds’ tells the researcher that the quotes present in this code belong to pre-registration pharmacist A and were collected at the week 3 interview. Therefore, since this code was generated by pre-registration pharmacist A under the ‘Implementation’ category. In the second coding tree, this code is inserted as follows:

- PRA
    - Implementation
        - A3. Drug rounds

Repeat: This process is repeated for all the codes generated by the first coding tree.

7.3.5.5 Analysing non-longitudinal data

The data generated by the week 14 interviews with the pre-registration tutors and ward staff were not longitudinal, there was only one time point. Hence, the first phase of trajectory analysis could not be performed on this data.

However, these data could be coded according to the principles of the second coding tree i.e. by pre-registration pharmacist. A third coding tree was in NVivo QSR International version 12 created for the pre-registration tutors and ward staff:

- PRA staff
    - Implementation
    - Local viability
    - Institutionalisation
    - 'Surprising' data
- PRB staff
    - Implementation
    - Local viability
    - Institutionalisation
    - 'Surprising' data
- PRC staff
    - Implementation
    - Local viability
    - Institutionalisation
    - 'Surprising' data

The interview transcripts for the staff were coded and organised into the framework.

7.3.5.6 Summary of analysis

Three coding trees were created:

1. Time tree for pre-registration pharmacist data.
2. Case tree for pre-registration pharmacist data.
3. Case tree for pre-registration tutor and ward staff data.

Trajectory analysis was applied to the longitudinal data generated by the pre-registration pharmacists. The process of analysing this data within the trajectory approach was informed by framework and abductive analysis.

7.3.5.7 Validation strategies

It is recommended that a research study should meet at least two of the nine validation strategies in order to be considered trustworthy (Creswell and Poth, 2017c). This study used six validation strategies to confirm trustworthiness of the data: reflexivity, triangulation, rich descriptions, disconfirming evidence, prolonged engagement in the field and peer review.

The reflexive account of the researcher draws attention to the already positive working relationships that existed between her and the staff involved in implementing the placement. She acknowledges her prior beliefs that the placement would be implemented with a high degree of success because those involved in implementation had played a large role in the design and were invested in a successful outcome.

The study design captured the views of pre-registration pharmacists and members of staff working on the placement ward. This allowed the data generated by the pre-registration pharmacists to be triangulated with data from the ward staff.

Interviews with the pre-registration pharmacists generated rich descriptions of their experiences. Disconfirming evidence was highlighted and is further explored in the results and discussion.

The researcher's prolonged engagement in the field with the pre-registration pharmacists allowed them to build rapport as the interviews progressed. The trainees appeared to become more relaxed over the course of their interviews.

Peer review was undertaken on the interview transcripts and data analysis by another member of the research team (JS) who provided assurance that the coding undertaken by the researcher (HK) was accurate.

The outstanding validation strategies (collaborating with participants, member checking, external audits) for confirming trustworthiness of the data were not carried out during this study. Collaborating with participants would not have been appropriate during the evaluation of the longitudinal placement. Member checking and external audits would go above what is required to confirm trustworthiness from data generated during the first round of intervention implementation, where beta testing is informing the aim and objectives of the study.

7.4 Results

The pre-registration pharmacists who volunteered for the longitudinal placement came from different universities. None were undergraduate students at the University of East Anglia and therefore did not know the research team prior to commencing their training.

Twelve interviews with three pre-registration pharmacists were carried out. The interviews lasted approximately 20-90 minutes. All the interviews from week 3 onwards lasted over an hour with each trainee. Every effort was made to ensure that the pre-registration pharmacists were interviewed within the same week as one another, but due to logistical reasons this could not always be arranged due to annual leave or attendance at residential pre-registration pharmacist teaching programmes.

Twenty interviews with fourteen members of staff were carried out across the two hospitals. These interviews lasted approximately 7-30 minutes. Since the placements for PRA and PRC at hospital 1 were conducted on the same ward in a sequential fashion, some members of staff were interviewed twice. For the different interviews, they have been given a different identifying code. This makes it possible to distinguish whether they were describing PRA’s or PRC’s placement.

Due to the large quantities of data collected in this study, not all of it could be presented in this chapter. Hence, additional quotes have been provided in appendix 33 for further reference. Table 17 captures the role of the participant, the hospital they were based at, the week of their interview and the ID code used to identify them.

Table 17: Participants in the longitudinal placement study.

Participants' role	Hospital	Week	Participant ID	Participant ID
Pre-registration pharmacist A (PRA)	1	0	A0	-
		3	A3	-
		7	A7	-
		14	A14	-
Pre-registration pharmacist B (PRB)	2	0	B0	-
		4	B4	-
		7	B7	-
		14	B14	-
Pre-registration pharmacist C (PRC)	1	0	C0	-
		5	C5	-
		8	C8	-
		14	C14	-
PRA				
First tutor	1	7	APT1	-
Second tutor		14	APT2	CWP
Ward sister			AWS	CWS
Deputy sister			ADS	CDS
Staff nurse			ASN1	-
Staff nurse			ASN2	-
Consultant			ACONS	-
Junior doctor			ACMT	-
PRB				
Ward pharmacist	2	14	BWP	-
Ward sister			BWS	-
Deputy sister			BDS	-
Staff nurse			BSN	-
Consultant			BCONS	-
Junior doctor			BFY1	-

PRC				
Tutor	1	14	CPT	-
Ward pharmacist			CWP	APT2
Ward sister			CWS	AWS
Deputy sister			CDS	ADS
Staff nurse			CSN	-
Consultant			CCONS	-

The results have been presented by the themes within the framework. Within each theme, the data has been arranged in chronological order where applicable. In some themes, where there was variation in results between the pre-registration pharmacists, the data has been presented separately, by pre-registration pharmacist. Data from the ward staff has been interspersed throughout the themes to triangulate the experience of the pre-registration pharmacist, or in some cases, provide disconfirming evidence to that of the pre-registration pharmacist. The themes and subthemes are presented in table 18.

Table 18: Themes and subthemes in the longitudinal placement study.

Theme	Subtheme
Background	Pre-registration pharmacists
	Ward experience prior to placement
	Placement wards
Implementation	Placement design
	The ward pharmacist
	The ward team
	The pre-registration pharmacists
Local viability	Part of the team
	Enriched learning experience
	Development as a professional
	Improved pharmacy service
Institutionalisation	Continuation of the placement
	Preparation for the placement
	Length of the placement
	Timing of the placement
	Qualities of the ward and ward staff
	Qualities of the ward pharmacist
	Qualities of the pre-registration pharmacist
	Support and supervision

7.4.1 Background

The ‘Surprising data’ element to the framework was identified as the ‘Background’ information. This theme provides an overview of each of the pre-registration pharmacists, their previous pharmacy experience, motivations for volunteering for the ward placement and some experiences of their rotational ward training prior to the longitudinal placement commencing.

Additional information on the placement wards has also been provided, to give the reader a greater understanding of the background and context within which this research took place. This will help the reader to determine whether these results are applicable to their setting.

7.4.1.1 Pre-registration pharmacists

Prior to commencing their placement, the pre-registration pharmacists discussed their pharmacy degree, the extent of their previous work experience and described some of the reasons why they had volunteered to participate.

Pre-registration pharmacist A (PRA)

PRA wanted to undertake more placements during her degree to develop a better knowledge of medicines, particularly around medicine administration. She described how not knowing the answers to medicines administration questions made her feel inadequate as a future pharmacist.

PRA had previous community pharmacy experience, but always wanted to work in hospital pharmacy because she did not find community pharmacy enough of a stimulating learning environment.

PRA's desire to work as part of the team on a ward was the biggest driver behind her volunteering to participate in the longitudinal placement. Yet, she was worried about whether she would be useful to the ward team because she had not completed all her pharmacy-related competencies and did not want to be standing around with nothing to do during the placement.

Pre-registration pharmacist B (PRB)

PRB had undertaken community pharmacy summer placements but did not enjoy some of them because the environment had not been friendly and could feel isolating. PRB was attracted to the hospital setting because she would have the support of a team and more opportunities to interact with patients.

During her degree, PRB enjoyed the clinical modules because they were more relevant for practising as a pharmacist. She described being able to learn better from doing rather than reading or listening; she identified herself as a hands-on learner.

PRB volunteered for the placement because she wanted the opportunity to become part of a team and viewed the placement as an opportunity for a unique learning experience.

PRB did not have any concerns about the placement but described how pharmacists in the department were worried that she was going to turn into the ‘ward skivvy’ and be the ‘nurse’s slave’ when the ward got too busy. However, PRB did not envision that happening, since she considered there were too many people on the ward who had a vested interest in ensuring that this would not happen.

Pre-registration pharmacist C (PRC)

PRC had previously worked as a healthcare assistant (HCA) in hospital, which he described as ‘not an easy job’ and highlighted that HCAs need to be passionate about wanting to help people.

PRC did not enjoy studying topics at university that were not relevant for his future practice as a pharmacist. PRC instead preferred clinical modules and placements because they gave him the opportunity to understand how medicines affect the lives of patients and the role of the pharmacist in those interactions.

PRC volunteered for the longitudinal ward placement to learn more about how pharmacists can work with other healthcare professionals on a ward to deliver good patient care. PRC expressed concerns over the level of support he would receive from the ward pharmacist during the longitudinal placement.

7.4.1.2 Ward experience prior to placement

The pre-registration pharmacists described some of their experiences working on the wards during their rotational training before they commenced their longitudinal placement. They noticed that frequently, ward staff did not know the name of the pharmacist. Pharmacists would often only order the necessary medicines and carry out the medicines reconciliations before leaving the ward.

In addition, the ward pharmacists did not spend much time with the trainees. Once the trainees were able to order medicines and conduct medicines reconciliations, they were frequently assigned these tasks by the ward pharmacists. Once these tasks were completed, the trainees were encouraged by the pharmacists to study in the library or return to the pharmacy department to carry out dispensary duties. Hence there was little/no one-to-one training and support. This resulted in the trainees undertaking large amounts of shadowing with limited opportunities to work with non-pharmacy healthcare professionals and often feeling 'in the way' on the wards. Consequently, trainees focused more on seeking to acquire knowledge relevant for the registration assessment, rather than seeking to develop as a member of the healthcare team.

"…as pre reg's…nobody knows who we are…we don't really know what's going on… and wards are busy and when you're shadowing, you're inevitably 'in the way'. Someone wants to get to the computer; someone wants to get to the notes and you're just kind of stood there watching everything go on around you…" B14

7.4.1.3 Placement wards

Hospital 1

At hospital 1, the ward sister and consultants had worked together for several years and were responsible for establishing a supportive ward culture. They set good examples, involving staff in decision-making, enabling the team to be efficient and organised with their work. PRA identified the ward team as being 'pro pharmacy' in their approach. The staff welcomed the pre-registration pharmacists, who felt valued by the ward staff and the trainees were motivated to work hard and become involved.

APT1 was initially concerned that the prototype placement could have misled the nursing staff's expectations regarding what PRA could contribute. However, the nursing staff appeared to recognise at an early stage of the placement that PRA was not at the same stage in her training as the

prototype pre-registration pharmacist had been and could identify some of her limitations.

Hospital 2

Similarly, the placement ward at hospital 2 was a supportive training environment for all types of student learners. The presence of the pre-registration pharmacist did not remove training opportunities from other learners on the ward and at no point was the ward overburdened with large numbers of trainees. The opinion and input of pharmacy staff was sought when making decisions about a patient's care.

"…the doctors and the consultants…they're quite pro pharmacy. They love having…the pharmacy input…they're quite keen on getting pharmacists out onto the wards…" B14

Previously held assumptions that wards would be too busy and would not be interested in supporting the longitudinal placement were not reported. Rather, the ward staff were humbled that they had been nominated by the deputy chief pharmacist to participate in the study.

Hospitals 1 and 2

Both placement wards were established learning environments for trainee healthcare professionals, hence training was part of the ward culture. Notably, the pre-registration pharmacists also identified that both placement wards were supportive of the role the pharmacy team in the care of patients. The ward staff reported that the researcher prepared them well for what to expect, but that some of them struggled to visualise exactly how the placement would work and where the pre-registration pharmacist would fit in. However, once the placement began, these concerns appeared to fade away, as the trainees became involved in ward activities.

7.4.2 Implementation

This theme describes how certain key features of the placement's design were implemented by the trainees and ward staff. The main design features

explored included the resources (workbook and workplace assessment tools), induction, board rounds and consultant ward rounds.

The ward pharmacists heavily influenced the way the placement was implemented. Each trainee experienced different types of input from their ward pharmacist(s), leading to adaptations to the placement's design by the pre-registration pharmacist.

This contrasted to the way in which the ward teams (nurses, doctors and other allied healthcare professionals and staff) implemented the placement at each hospital, which appeared to be largely similar.

7.4.2.1 Placement design

7.4.2.1.1 Resources

The workbook was used by all the pre-registration pharmacists and was most useful to them at the start of their placement. It helped provide an overview of what the placement involved and how it should be implemented. It was often referred to in discussions about potential learning opportunities between the trainees and the ward sisters. The flexibility of the placement design, as documented in the workbook, was a positive feature.

However, trainees reported that the format of the workbook was sometimes confusing, potentially duplicating other pre-registration training resources and increasing their workload. PRB appeared to use the workbook as a reference for the placement less than PRA and PRC, citing the already heavy pre-registration pharmacist workload as one of the reasons for this. In addition, the workbook had become almost redundant by the middle of the placement for all the trainees as they no longer needed to refer to it for guidance. They had gained a better understanding of what they wanted to learn and who to approach regarding the different learning opportunities, so were able to manage this themselves, without relying on the workbook.

The workplace assessment tools were most frequently used with pharmacists but also occasionally with senior nurses and doctors. The tools helped the trainees to achieve competence in GPhC performance standards.

They also reported receiving more constructive feedback when using the tools. Overall, PRB used the tools less often than PRC and PRA. The ward pharmacist for PRB (BWP) explained that he gave a lot of feedback during the placement, but that he and PRB did not document this in a formal way. The ward pharmacist and pre-registration tutor at hospital 1 supported the use of the workplace assessment tools, acknowledging that experience of using them in pre-registration training would be beneficial to the trainees during their diploma.

7.4.2.1.2 Induction

The trainees undertook a 1-week induction programme, developed by the ward sisters. The induction programmes included attending board rounds, consultant ward rounds, spending time with specialist nurses, staff nurses, junior doctors and the discharge coordinator.

7.4.2.1.3 Tutor meetings

All the pre-registration pharmacists continued to meet with their pre-registration tutors every two weeks throughout their placement. PRA's and PRB's tutor meetings were held in the pharmacy department and PRC's meetings were held in the ward consultation room. PRC's tutor (CPT) was not the ward pharmacist but chose to attend the ward to hold their meetings there. This provided the opportunity for CPT to gather feedback from the nursing staff on PRC's performance and also enabled CPT to access ward resources when PRC was presenting a case-based discussion.

During their tutor meetings, the pre-registration pharmacists continued to have their evidence reviewed, demonstrating they had met the GPhC performance standards during the placement.

"…it's [placement] been really helpful in terms of gathering evidence…so [APT1] has been able to sign me off on quite a few [performance standards] …the other pre-reg's were like 'how many have you written so far?'…I was like 'I've got a fair few off of [placement ward]' and they're like 'whoa I'm really struggling' and I was like 'well you should do [placement]'" A3

7.4.2.1.4 Relationship with pharmacy

Throughout the placement, the pre-registration pharmacists stored their belongings in the pharmacy department, beginning their day in pharmacy and where possible, continuing to take lunch breaks with pharmacy staff members. The trainees regularly visited the dispensary to collect medicines for their ward and continued to invest in building relationships with the pharmacy team, which was important when they needed urgent items dispensing. They described how they tried to work effectively with both the pharmacy department and the ward to ensure a positive relationship with both departments was maintained during their placement.

"…sometimes if it's a late [patient] discharge I'll just come down [to pharmacy], apologise and wait…or give them a hand with dispensing it…and then I'll take it back up [to the ward]…and I think they're [dispensary staff] appreciating it a lot more…I think it's building a relationship with everyone" A7

7.4.2.1.5 Adaptations

Upon completing the MRs and orders on the placement ward, PRA would then liaise with the wider pharmacy team, visit other wards and complete MRs and orders there. During the first few weeks of her longitudinal placement, PRA was unclear of her role on the ward once the MRs and orders had been completed.

This reflects an adaptation to the placement design, since the initial design intended for the pre-registration pharmacists to work solely on the one ward for the duration of the placement. PRB and PRC did not adapt the placement in this way.

7.4.2.4.6 Board round

The trainees were first introduced to the ward staff during the morning board rounds by either the ward sister (at hospital 1) or the ward pharmacist (at hospital 2). Through attending the board round, the trainees learnt the names of staff and gathered information regarding changes in patient's therapy and

plans for discharge. The medical and social information about the patients enabled them to better prioritise their work on the ward and optimise medicines accordingly.

7.4.2.4.7 Ward round

All the pre-registration pharmacists attended consultant-led ward rounds; PRB appeared to attend these most frequently. During the ward rounds, the pre-registration pharmacists raised queries regarding the patient's drug history and answered formulation and stock questions. Having an awareness of drug interactions and an easily contactable pharmacist were important for the pre-registration pharmacists when attending the ward rounds, since the consultants frequently asked the pre-registration pharmacists medicine-related questions. Often, they did not know the answer, but would always find out and report back. All the pre-registration pharmacists reported feeling included on the ward rounds, which the consultants tailored, making them more medicines focussed. The junior doctors also found the availability of the pre-registration pharmacist on the ward round a useful resource for medicines-related queries.

"...she [PRB] was quite happy just to come on the ward rounds to be asked questions…and it was good because rather than phoning someone up to ask them a medicine question, you've got someone there. I challenged her a bit…I think she learnt a lot…we tried to involve her it was though she was a junior doctor…" BCONS

7.4.2.4.8 Activity summary

Activities the pre-registration pharmacists participated in regularly included: attending medicines administration rounds, answering medicines-related queries, carrying out audits, checking patient's blood results and checking patient's observations. As well as these, each pre-registration pharmacist also described unique opportunities that had arisen during the ward placement such as:

- Attending surgery (PRB).

- Completing last offices on a patient (PRA & PRB).
- Conducting a home visit with an occupational therapist (PRB).
- Attending consultant ward rounds in A&E (PRB).
- Attending consultant clinics (PRB & PRC).
- Attending the day assessment unit (PRA & PRC).
- Observing pre-operation assessments (PRB).
- Cannulation (PRA).
- Attending meetings with the ward sister (PRC).
- Conducting antibiotic audits with the ward sister (PRC).

Observing and participating in these clinical procedures helped the trainees to contextualise their knowledge and they described how things began to make more sense to them.

7.4.2.4.9 Personal care

As the placement design intended, the pre-registration pharmacists were not involved in providing personal care to patients; nursing staff and pre-registration tutors agreed this was the correct decision. The trainees were not placed under any pressure to provide care in this way and were treated by the ward staff as 'pharmacists-in-training'.

"…they [pharmacists] were more worried that if they [ward staff] were really short of nurses, they would start overstepping the line…'Oh [PRB] can you just feed this patient?...' whereas that hasn't happened at all…they're not expecting me to be a nurse…I don't feel like the ward skivvy…" B4

7.4.2.4.10 Routine

By the middle of the placement, all the trainees had begun to establish a routine on the ward. Specific activities such as, attending the board round, identifying new patients, preparing discharge medicines, ordering medicines and communicating with the ward pharmacist, all became part of the daily routine of the pre-registration pharmacists, which helped cultivate a sense of 'belonging'. PRA and PRB appeared to thrive in their respective routines;

their confidence to work in a team improved, which helped better prepare them for independent working.

"…when I was on [placement ward], I'd come in and I knew exactly what I needed to do…I knew what was coming…I really enjoyed being in the team and…having my place in a team" B14

7.4.2.4.11 Knowledge sharing

From the midpoint of the placement, PRA had begun to grasp which resources were important for her role on the ward. She printed out the relevant medicines-related guidelines from the hospital intranet and put them into a pack so she could continue to access them when there was not a computer available for her to use.

All the pre-registration pharmacists gave examples of occasions when they had shared their knowledge of medicines with the staff on the ward. The complexity of knowledge shared evolved from the storage of medicines to the administration and dosing of medicines.

The sharing of their knowledge and giving advice to other healthcare professionals, without first checking with the ward pharmacist, was acceptable if the pre-registration pharmacist had used guidance or reliable resources to determine the correct answer. If the pre-registration pharmacists were uncertain of their answer, they would contact a pharmacist to check that their advice was correct.

"…in terms of giving out advice…that's always…a grey area…so long as I'm using…guidelines he's [BWP] happy for me to give that [advice] directly; provided I'm not just remembering it off the top of my head…" B4

7.4.2.4.12 Self-directed time-management

When the trainees were not carrying out pharmacy-related medicine tasks or seeking out training/shadowing opportunities with members of the multi-disciplinary team, they would spend time reading patients' notes and learning about their conditions. They practised clinically screening

prescriptions using all the available resources to them on the ward. PRB appeared to have more support, than PRA and PRC, to develop her clinical screening skills.

"… clinically screening TTOs quite often [BWP] asks me to look at them and I go through them and highlight any issues and then discuss the issues with him and then we come up with a plan together…" B4

7.4.2.2 The ward pharmacist

Each pre-registration pharmacist experienced different levels of pharmacist supervision during their placement. PRA was supervised by three ward pharmacists over the course of her placement. PRB and PRC were allocated just one ward pharmacist for the duration of their ward placements.

PRA

The first ward pharmacist who supervised PRA from weeks 1-4 of her placement, was a recently qualified rotational pharmacist. The recently qualified pharmacist covered two to three wards each morning, had a 1-hour checking slot in pharmacy and covered patient discharges for up to four wards each afternoon. Hence, he was not present on the placement ward for long periods of time each day and his absence was keenly felt by both PRA and the nurses.

"…I feel like this [absence of a pharmacist from a ward] is when you risk them [ward staff] losing their trust or faith in pharmacy as a profession because…everyone else has done their bits and then it…comes down to 'why isn't pharmacy doing their bit?' But then if you look at the timetable and [ward pharmacist] is doing…101 things that can make it difficult…cos if he's [pharmacist] then gone for four hours…nothing gets done in terms of pharmacy…that's when it [work] piles up" A3

The absence of a ward pharmacist for so many hours of the day, coupled with the lack of senior pharmacist support, was a concern for the ward sister. Upon completing the A3 interview, at the request of PRA, the researcher (HK) spoke to the ward sister (AWS) to discuss her concerns regarding the

lack of senior pharmacist support. Following this conversation, the researcher discussed this matter with the deputy chief pharmacist who then arranged for the education and training lead (also PRA's tutor (APT1)) to be allocated as the ward pharmacist for weeks 5-8 of PRA's placement. APT1 had a good relationship with AWS and shared the supervision and training of PRA with AWS. APT1 enjoyed the experience of having dedicated time to provide training opportunities for PRA. As an Advanced Clinical Practitioner, APT1 also used his additional knowledge and skills regarding diagnosis and clinical assessment of patients to enhance the educational experience for PRA.

During week 8 of PRA's placement, APT1 left the hospital Trust to seek employment elsewhere. A band 7 rotational pharmacist was allocated to the placement ward for the final weeks of the placement. PRA's new pre-registration tutor (APT2) grappled with trying to provide education and training opportunities for PRA during the final weeks of her placement, whilst managing other responsibilities.

"I think she [PRA] could have done with a bit more support from a senior pharmacist, a lot of the time it does seem like she's on her own…I know…they're [pharmacy] quite stretched, but maybe a little bit more input, someone…checking and supporting her…she obviously has questions and things she needs to ask people. It's a bit difficult when you're on your own and you've got…lots of people on the ward…asking her lots of things…" ADS

PRB

The ward pharmacist for PRB, (BWP) held senior pharmacy departmental roles in addition to acting as the ward pharmacist for the placement ward. PRB described how at the start of the placement, BWP had been on the ward almost all day for at least the first week. Over time, BWP's presence on the ward decreased in line with PRB's development. PRB enjoyed the process of acquiring more of this independence and felt as though it happened in a natural and safe way, as BWP continued to oversee her work. This enabled PRB to have the freedom to make decisions and mistakes in a

controlled and safe way, thereby gaining more confidence and independence.

BWP endeavoured to tailor the training he provided according to the type of learner the pre-registration pharmacist was. He observed PRB, discussed patients, frequently asked her to explain the rationale behind her decision-making and asked her to prioritise the patients in order of urgency.

“My approach, is…it depends on your student… probably the old-fashioned way…see one, do one, teach one… I would get her to look into things and report back...” BWP

BWP encouraged PRB to participate in the learning opportunities that arose from close working alongside staff, such as ward rounds and clinics whilst BWP completed the pharmacy-related tasks e.g. MRs and To Take Out discharge medicines (TTOs). This was in contrast to PRB’s prior experience of ward placements in the rotational model, where a large proportion of her work involved conducting MRs whilst the pharmacist screened prescriptions or participated in discussions with the ward team. As PRB acquired more independence towards the end of her placement, BWP came to the ward less, usually only mid-morning to check her work. PRB would do all the preparatory work and attend the ward meetings, then communicate with BWP via phone, which prescriptions he needed to screen and check. The increased responsibility she acquired was gradual and natural.

BWP enjoyed ‘acting as a consultant’ during the placement, training PRB and observing her development. This model worked effectively for both, allowing PRB to be working almost independently on the ward by the end of the placement, with little input from BWP.

“…I am used to being like a consultant…In a sense that she [PRB] would do the med recs, she would report back. I got her to do basically the duties of a band 6 pharmacist…she would be able to ring me up and say ‘Mrs X is now going to be discharged, can you come down and write some of the TTOs’...” BWP

PRC

The ward pharmacist for PRC, (CWP) held several senior pharmacy departmental roles. CWP was acting as maternity cover for the lead pharmacist in OPM and a few weeks prior to PRC's placement, had been promoted to a senior role within the pharmacy department. She was promoted within the hospital, so at the time of PRC's longitudinal placement, CWP was effectively performing three roles: her pharmacist responsibilities, OPM maternity lead cover and a senior departmental pharmacy role. In addition to these, CWP was also in the process of undertaking her independent prescribing course during the longitudinal placement and acted as the ward pharmacist for up to three wards on any given day.

At the beginning of his placement, CWP worked closely with PRC and encouraged him to complete a number of workplace assessment tools and tested his clinical knowledge regularly. She was a consistent presence on the ward and when not working on the ward directly, was always available via the phone.

CWP would observe PRC carrying out certain tasks on the ward initially, then over time PRC began carrying out more tasks independently. This allowed him to 'practise being the pharmacist', knowing that his work was still being checked.

Further into the placement, PRC struggled to access some of the learning opportunities due to the number of responsibilities CWP was juggling.

PRC's hard work and valuable contribution, whilst CWP was undertaking her prescribing course, had not gone unnoticed. CWP had made a point of thanking him for his hard work, which helped PRC to feel valued and appreciated in his role on the ward.

"…it's [pharmacy department] been really short [staffed]…this week she's [CWP] had other commitments…but…she was saying…that …she's happy with…how I'm progressing and she actually said 'thank you' for my help this week which…is good to hear…positive feedback makes me feel like a valued member of the team…" C8

However, due to extreme short staffing in the pharmacy department at hospital 1, from week 8 onwards there was little one-to-one pharmacist support. This affected PRC's ability to attend the board or ward rounds as he did not have time to attend, since he needed to carry out the MRs, orders and TTOs. When CWP could attend the ward, there was no time for one-to-one teaching or training. PRC's development appeared to freeze when the pharmacist support was withdrawn.

"…initially it was good, we [CWP and PRC] were seeing new patients together…we would look at blood results, I'd attend board rounds… so it was really good…the first 6 7 8 weeks…there was a lot of education and training…it was really going well until the pharmacist involvement started to…decline…" C14

The ward sister (CWS) was concerned about the staffing levels in pharmacy and the extent to which PRC had been practising on the ward independently by taking on additional roles to cover the vacancies. CWS acknowledged that she could not assess whether or not PRC was competent and capable enough to be left to manage the ward on his own, from a pharmacy point of view. CWS believed that PRC was not supported enough by the pharmacy department during this time.

Despite this, CWS did not find that the lack of pharmacist support affected PRC's ability to interact and work within the ward team. CWS turned the lack of support into a positive regarding PRC's professional attitude and how well he was coping. PRC's tutor (CPT) and the ward pharmacist (CWP) were unaware of the ward sister's (CWS') concerns regarding the lack of pharmacy support.

However, the deputy sister (CDS) reported that PRC had been supervised appropriately by the pharmacy department. She believed he had a better support system of pharmacists around him than PRA had experienced, which enabled him to have more dedicated time to learning rather than just providing a pharmacy service to the ward.

7.4.2.3 The ward team

Hospital 1

The ward sister (AWS, CWS) checked in on an almost daily basis with the pre-registration pharmacists to find out how they were doing. She provided access to learning opportunities on the ward through liaising with the relevant staff. She made a concerted effort to ensure that the learning experiences of the pre-registration pharmacists was prioritised. She took steps to prevent the pre-registration pharmacists from being used solely in a service delivery role by both the pharmacy department and the ward.

"…in the afternoons [AWS] always says to me '…if you've got pre-reg reading to do, just make sure you prioritise and do that'. So, she always makes sure that you're on top of everything and on top of your learning that you're not just there to do a job and go home…" A14

Hospital 2

PRB and the ward sister (BWS) would check-in with each other every day to establish PRB's routine; the ward pharmacist (BWP) was the first person PRB would approach with any questions. Since PRB had been introduced properly to the ward team by the pharmacist, the ward staff believed this made it easier for her to integrate into the team.

Hospital 1 and 2

For all three pre-registration pharmacists, it appeared that the importance of the ward sister and pharmacist in introducing them to other members of staff and providing opportunities for them to get involved, lessened over time. This was due to the ability of the pre-registration pharmacists to access other members of staff on the ward directly to seek out opportunities to work together.

"…because of the…communication I had with the doctors, I was then able to…have a conversation with them about changing things on drug charts or having a look at bloods and…amending medications" A14

7.4.2.4 The pre-registration pharmacists

PRA was described as friendly, eager and likeable by the ward staff. Despite the early stage of her pre-registration training, she worked hard and fitted into the team well, using her initiative to support the ward and patients. She gathered evidence independently on the ward and was keen to learn.

PRC was described as willing to help, keen to learn, approachable, professional and friendly. He was reserved and appeared shy, but this did not affect his ability to embed into the ward team and build good relationships. His regular presence on the ward helped and he positioned himself in an area close to the ward team, rather than in a secluded spot, where some pharmacists preferred to work.

PRB was self-motivated, professional, approachable, capable and enthusiastic. She frequently went the ‘extra mile’ for patients, demonstrating compassionate care and a desire to work hard. She was aware of her limitations, keen to learn, prepared to grasp every opportunity and do the absolute best she could.

7.4.3 Local viability

Local viability describes how and why the longitudinal placement survived as an intervention during its implementation on the hospital wards. Over the course of the placement, each pre-registration pharmacist identified themselves as becoming part of the ward team. Becoming part of the ward team afforded the trainees a richer learning experience, the opportunity to develop their professional identity. This led to the placement wards stating they had received an improved pharmacy service.

Membership in the ward team led to benefits for trainees, ward staff and patients, all of which contributed to ensuring the longitudinal placement did not just survive, but rather, thrived in this research setting.

7.4.3.1 Part of the team

Learning the names of the ward staff was an important first-step for the pre-registration pharmacists in becoming members of the team, as this allowed them to initiate small interactions and begin conversations. Later, the trainees were included in troubleshooting conversations with the doctors and nurses. There was no longer a perceived professional barrier between them.

"…I feel like once I've been on a ward round with them [doctors] and I've had a conversation…there's more of a working relationship there … [having a] normal interaction 'oh can you just grab the notes?'…breaks down that [professional] divide, cos you've had an interaction. You have spoken to each other, it's literally as simple as that" B4

The first four weeks of the placement were the most important for establishing good working relationships and the board rounds helped the trainees to do this. However, these relationships were not fully formed after just four weeks, as the trainees' unease in approaching the ward staff with queries was still evident. PRC was annotating drug charts with prescription queries, rather than speaking to doctors and insisting that nurses adhere to the strict 4-hour TTO notice time for patients who required medication compliance aid dispensing.

Gradually, this began to change as the staff began to interact differently with the trainees because of their continuous presence on the ward. Initially, the nurses took an authoritarian approach with PRA, giving her strict instructions as to what they needed her to do. But by the midpoint of her placement, the nurses were involving PRA in the decision-making process, seeking her opinion, rather than dictating to her.

From the midpoint of their placements, the ward sisters had allocated the pre-registration pharmacists as supervisors to students from other healthcare disciplines. The trainees enjoyed this experience and it helped them develop their interpersonal skills and acquire evidence in support of meeting the GPhC performance standards.

The trainee's continuous presence on the ward, over a number of weeks, enabled them to undertake more useful tasks. This helped the trainees feel as though they were contributing to the work of the ward and were part of the ward team. The trainees were able to better understand the roles and responsibilities of each healthcare professional. The pharmacy-related tasks which the doctors needed to complete, such as MR queries, were actioned more swiftly. The ward staff preferred having the consistent pharmacy presence on the ward.

"…she [PRB] fitted in extremely well, and the ward…embraced her…she very soon become part of the team, so they all miss her…I might be out of job (laughter), cos they might prefer [PRB] to me. Cos [PRB] was always there and I'm not there that much…" BWP

All the trainees identified becoming a part of the team by the end of their placement. PRB identified becoming a part of the ward team the earliest, followed by PRA and then PRC. One of the ways the trainees knew they had become part of the ward team was when they were able to participate in the social conversations.

"…we [ward staff and PRC] just have a chat really about pretty much everything from football…[to] Neighbours… and I think that's one way that kind of helped me immerse in the team…they don't see me like an outsider, they see me as part and parcel of the team…" C14

By comparison, the feeling of 'non-membership' within ward teams, was a common experience when the pre-registration pharmacists described their previous short ward rotations. Hence, becoming part of the ward team during the longitudinal placement was an important achievement for the trainees.

"…I didn't feel like I was 'in the way' on [placement ward] which was quite nice…cos they [ward staff] all knew who I was and they knew why I was there and I was always around…I felt like I had a place on the ward and I fitted into the team…'" B14

Despite becoming members of the ward team during their placement, the practice of the senior ward staff did not change as a result of the pre-registration pharmacist's presence.

" …we [ward staff] went along with our everyday normal practice…" BDS

7.4.3.2 Enriched learning experience

The trainees described how they learnt more during the longitudinal placement than during their degree or short ward rotations. They attributed the opportunity to learn more from having established membership within the ward team. The placement gave the trainees a better understanding of how a ward functions and the roles of the different members of staff. Attending board rounds, ward rounds and medicines administration rounds were the main activities that provided a richer understanding of the ward context.

Through regular attendance on the ward rounds, the trainees were able to build a better clinical picture of their patients. Becoming part of the ward team enabled PRB to learn the prescribing habits of the consultants.

"…one consultant…stops them [certain medicines] in every patient…I know certain drugs [he] will…always stop…it [this knowledge] makes me feel more useful on the ward…it's better to be part of a team because I feel like I'm learning a lot more…" B7

The ward rounds were identified as one of the most useful learning experiences, since the consultants often incorporated teaching and learning opportunities for the pre-registration pharmacists. Trainees were often asked medicines-related questions by the consultants during ward rounds, which helped them to learn. The consultants enjoyed interacting with the pre-registration pharmacists and engaged them in clinical decision-making.

"… his [ACONS] ward rounds really good…cos he…doesn't just leave you there…to sit and watch…he asks questions '…so…from a pharmacy angle, look at this drug chart, what do we need to do?'…so it gets you thinking…they [doctors] all involve me a lot which is really helpful in terms of learning" A3

The consultants were viewed as approachable by the staff and students on the ward, which helped create a more inclusive learning environment. The consultants would occasionally take the trainees to different wards to learn about different medicine or patient groups. Hence, membership in the ward team resulted in the pre-registration pharmacists being offered learning opportunities beyond those immediately available on the ward.

PRB and PRC were offered the opportunity to attend consultant clinics. This enabled them to observe the consultants take a different approach to decision-making and problem solving. BCONS believed that through attending his clinics, PRB would be better equipped for making decisions and advising doctors on the deprescribing of medicines in the future.

Opportunities for sharing knowledge and training opportunities were not limited to the consultant ward round or the clinic. All the pre-registration pharmacists described instances when they would interact and learn with the doctors, nurses, physiotherapists, occupational therapists and discharge coordinator in a non-ward-round setting. Interacting with different healthcare professionals helped the trainees to understand the wider picture of a patient's care and treatment.

"…sometimes we'll [foundation year doctors and PRA] sit down and have a chat about what we've seen…so they've been able to explain to me how ECGs are supposed to be read and [ACONS] was showing me how you look at a chest X-Ray, a knee X-ray and the different conditions like osteoarthritis, osteomyelitis different things like that..." A7

Building friendships, as well as positive working relationships, with the ward staff, facilitated other learning opportunities. The junior doctors would support the trainees in their learning about medicines, explaining different clinical conditions and treatment pathways from the medical perspective. By the middle of her placement, the ward staff were inviting PRA to participate in medicine-focussed activities on the ward. The pre-registration tutors recognised that becoming part of the ward team improved the trainee's learning experience.

"…there's more that we [pre-registration tutors] could contribute in…greater depth in a prolonged period [on a ward]…what I liked about it the most, it has…certainly improved…their learning…" APT1

All the pre-registration pharmacists reported that one of the most profound things they learnt on the ward was that it was 'ok' for them admit that they did not know the answer to a question, but that they would look it up and get back to the staff. Initially, they felt under pressure to get things right, but gradually learnt that it was 'ok' to look things up and check first. Each time the trainees had to look up an answer, they learnt and remembered the answers for the next time they were asked the same question. They were not just completing tasks and 'ticking boxes' during the placement.

"…I think I'm a lot more prepared now [for the registration assessment]…cos of the placement and just being exposed to different conditions and…treatment options constantly…being on the ward…you're forced to learn cos it's there in front of you" A7

The application of their clinical knowledge also improved as the trainees gained a more in-depth understanding of each patient, their clinical conditions and treatment plans. The opportunities for reflecting on their practice, to consolidate what they had learnt, was also easier during the ward placement because of the supportive learning culture on the wards. The improved application of knowledge increased the trainees' confidence and willingness to be involved in the decision-making process because they were no longer memorising information to learn for the exam. Rather they were learning from their experiences of how to treat patients in a holistic manner.

"…prior to my ward placement…I knew the names of medications but…[not] how to apply them. Whereas now…I feel like I know…because I've been on the wards…I feel a lot more confident …because I have that experience to back up what I say…I feel like it's…triggered me…not to just sit there and read things out of a book, which I think the other pre-reg's are doing because they haven't had that clinical face-to-face." A7

As well as identifying occasions and opportunities for sharing knowledge on the ward, such as through the consultant ward round, clinics and building

good relationships and friendships with the doctors, the pre-registration pharmacists also identified barriers to learning during the placement. This centred on the absence of the ward pharmacist, which inhibited PRA and PRC from accessing pharmaceutical knowledge and the multi-disciplinary team activities.

PRA acknowledged that when APT1 was working with her on the ward, the learning opportunities she was able to experience increased exponentially because of his presence. Similarly, BWP's approach to training and wealth of experience meant that the learning opportunities he could provide were rich and varied. Due to the longitudinal nature of the placement, he was also more prepared to invest in effectively training PRB from the beginning of her placement.

"I'm learning a lot because he [BWP] is so pro, like 'this will be a success'. He's [BWP] properly teaching me. Cos I think it's quite easy…for a lot of pharmacists to be like 'ok you just see the new patients and do their meds rec'…but you almost just become a med history machine…whereas [BWP] is very conscious [that doesn't happen]…" B4

Under the pharmacists' supervision, the trainees could amass more responsibility, practise making decisions independently and have someone with whom they could discuss pharmaceutical issues. It was important for the ward pharmacist to prioritise the trainees' learning experience on the ward and not use them exclusively to provide a pharmacy service.

The longitudinal placement reduced the trainees' exposure to other specialties in the hospital as they were unable to rotate through as many clinical areas. Yet the trainees did not feel disadvantaged by this since they were learning more during the longitudinal placement, than during their short ward rotations.

7.4.3.3 Development as a professional

During the placement, the ward staff grew to trust the trainees. This resulted in the trainees being given more responsibilities on the ward. Upon becoming

members of the ward team, the trainees were also able to establish their identity as future pharmacists and they grew in confidence.

7.4.3.3.1 Trust and responsibility

Over the course of the placement, the pharmacist, nurses and doctors grew to trust the trainees, resulting in them being given more responsibilities. Towards the end of their placements, the trainees were often left to carry out the pharmacy-related activities alone, which were then checked by the pharmacist. The trainees were trusted by the ward pharmacists to escalate their concerns and get in touch with them regarding any uncertainties. The nurses regularly observed BWP questioning PRB on her clinical knowledge, which reassured the nurses that PRB's knowledge was sufficient for her to practise more independently over the course of the placement.

"…a couple of weeks before she [PRB] left, [BWP] almost used to…leave her to…do the job…I think he felt he had the ability to trust her…she was still supported but she was also working independently in the realms of what she could do within her scope of practice as a student" BWS

This gave the staff confidence that they could trust the trainees to answer medicine-related queries correctly, adding to the pre-registration pharmacists' responsibilities and reinforcing their sense of belonging to the ward team.

"…a lot of his [PRC's] evidences reflect…quite a lot of responsibility…on his behalf. So, I think that's really good…we sort of thrust him into the action and I think that prepares him more for once he's qualified…" CPT

A symbol of the trust that was developing between PRC and CWS was a key to the ward drug cupboards, an indicator to PRC that he was entering into membership within the ward team.

"…[ward sister]…gave me a key [to the drug cupboards] …apparently…other pharmacists, they've been asking her but she never gave them one cos they keep breaking it. So I went and asked her nicely…[and] she's given me one [waves key]" C8

The growing levels of trust culminated in the trainees' undertaking more work independently, which was second checked by the pharmacist. This allowed the trainees to make mistakes in a safe way and learn from them, thereby improving their confidence.

7.4.3.3.2 Establishing an identity

At the start of their ward placement, PRA and PRC described how the ward staff at hospital 1 were not fully aware of their role. This caused some concern for the pre-registration pharmacists when they were asked to perform certain tasks, which lay outside of their competence. Comparatively, PRB did not experience as much uncertainty over what her role on the ward involved. The nurses treated PRB as a pharmacist but understood that there were certain things she could not do because she was not yet qualified. It was important to the pre-registration pharmacists that the ward staff understood the limitations of their role on the ward. This helped the trainees to feel more relaxed. It also ensured safer practising as an unregistered healthcare professional.

"…[if] people around you know your limitations…you don't really…feel pressured…they know that they'll have to wait for 10 minutes…they're not breathing down my neck expecting me to give them the answer…" C8

By the midpoint of the placement, the ward staff understood PRA's role; that she was not a qualified pharmacist. But at the same time point, not all staff understood PRC's role, which left him feeling as though his identity had not been fully established.

"…[I am] 'establishing' [an identity on the ward]…if you…ask me in 2 weeks' time, it'll probably be a different answer…it's still ongoing…not everyone is crystal clear as to my limitations…you still get the odd nurse that…shrugs…when you tell them 'no I can't do this'…I think I'm establishing…it's loading [draws circle in the air], identity loading…" C8

Due to PRC working for extended periods independently, the ward staff's ability to fully grasp PRC's 'pre-registration' status was affected. The ward sister and deputy sisters had to continuously remind staff that he was a

pre-registration pharmacist. Despite this, by the end of the placement, enough staff on the ward appeared to understand PRC's role for him to find his identity had been established.

7.4.3.3.3 Confidence and independence

The trainees rarely had the opportunity to build relationships with patients during their rotational training. This was due to the trainees only being present on the ward for short periods of time, during which, they only briefly interacted with patients. The trainees' confidence to interact with patients grew and was attributed to the length of the placement.

"…toward the end and midway he [PRC] seemed to be more confident with working independently…he would refer less to me…and he…[took] more clinical initiatives in providing pharmaceutical care for the patients; having more confidence by having stayed on the ward for a while and knowing what to do already." CWP

Establishing a routine on the ward helped the pre-registration pharmacists to become more independent; it made them feel like a healthcare professional and not a trainee whose priorities were only aligned to the GPhC registration requirements. This reinforced the trainees' perceptions that they were part of the ward team.

The ability to think for oneself and practise decision-making independently was important for the trainees' professional development as they cultivated their own individual practice and transitioned from student to healthcare professional. The transition of PRC into an independent practitioner was identified by the quality of evidence he was producing.

"the evidence is stronger…once he got onto [placement] ward because he got given a lot more responsibility, a lot more independence. So instead of… 'I saw' or 'I witnessed' or 'I watched'…or 'I helped'…[it's now] 'I did this', 'I spoke to this person', 'I confirmed this'… it's…taking that next step really. I'd like to think some of it might have been…[because] you're given a fixed place for 13 weeks…" CPT

7.4.3.4 Improved pharmacy service

Membership within the ward team enabled the trainees to offer a more responsive pharmacy service to the wards. This supported the local viability of the placement because the trainees were able to become useful members of the ward team and make valuable contributions to patient care, the most notable of which was the proactive discharge service.

7.4.3.4.1 The pre-registration pharmacist service

The ward staff described the pharmacy service they received prior to the placement, as mainly conducting MRs and transcribing orders. Since they were not considered part of the ward team this precluded the pharmacists from learning about and being able to contribute more to patient care. This also led to poorer joint decision-making as consultants were less likely to trust the prescribing advice of a pharmacist they did not know or work with.

"…I think when pharmacists are [reviewing medicines]…they need to be able to be look at that [prescription] and going 'that drug's rubbish…' and at the moment that's not happening. Partly that's…[because] they do not have the time, partly that's [because] they have no idea…who I am…If [BWP] phones me up, I listen to him. But if I'm on another ward...you [consultant] get a phone call from someone [pharmacist] you've never met before…you're less likely to get a good decision" BCONS

By comparison, the all-day presence of the trainees meant that they were able to support all the medicines-related activities, providing more person-centred advice and medicines optimisation for each individual patient.

"…when you get people [pharmacists] that just come up for the day, they don't understand…but they're [pre-registration pharmacists] ward-based…they're forward thinking about discharges…it's their ward so it's their priority to make sure that they've got everything up and ready…there's a different way of thinking…I think it works much better this way…and I think she [PRA] feels like she belongs here…it's like coming back home all the time…" AWS

Due to the pre-registration pharmacists having a greater understanding of the ward environment and its demands, they devised ‘workarounds’ to bypass some of the pharmacy rules regarding how quickly, or in what order medicines were dispensed for patients. When urgent items needed dispensing, the trainees used creative ways to ‘bypass the queue’ in the dispensary and obtain the medicines their patients needed. The trainees empathised with the challenges faced by the nurses regarding delays in acquiring medicines, preparing discharges, or contacting a pharmacist.

The ward staff benefitted from these ‘workarounds’ the trainees introduced and the consistent availability of the pre-registration pharmacists to answer questions and acquire urgent medicines. The trainees acted as effective intermediaries between the doctors, nurses and the designated ward pharmacist, enabling any medication or prescription queries to be identified and resolved more efficiently.

The longitudinal placement gave the pre-registration pharmacists a context in which they could practise being a pharmacist. They were able to learn how and where the role of the ward pharmacist was on the placement ward and reflect on what kind of ward pharmacist they wanted to be. The presence of the pre-registration pharmacists reduced the workload of the ward pharmacists, who also enjoyed the experience of training and supporting the pre-registration pharmacists to develop during the placement.

“…[PRB] was a constant presence on the ward…from my point of view…I benefitted tremendously and [placement ward] has, because she…knew the patients and can answer a lot of questions” BWP

Overall, the longitudinal placement led to the ward receiving a pharmacy service that was beneficial to the pre-registration pharmacists, the ward staff and the patients.

“…it’s [the placement] mutually beneficial, from our perspective you have a pharmacist presence on the wards on a regular basis, and for a longer period, and that can benefit us in many ways, seeking information, ensuring we have the necessary medication available on time…it greatly enhances the discharge process…from their [trainee] perspective…it’s a positive

learning experience for them. So I feel that's why it benefits both of us" CCONS

7.4.3.4.2 Patient care

The pre-registration pharmacists sought to model their practice on the behaviour and attributes of the ward team, which changed the way they contributed to patient care. Becoming part of the ward team enabled the trainees to learn how they could contribute to enhancing the patient experience. As a result, the trainees were no longer only interested in a patient's medicines (as was the case during their rotational training) rather, they also sought to learn about the patient's medical history, social history and recent test results. This patient-centred approach improved how the trainees clinically screened a patient's prescription. The board round was the formal ward activity which all the trainees attended and were able to learn about the holistic care of each patient. PRC shared an example of how through attending the board round, he learnt that a patient had been experiencing haematuria (blood in the urine) overnight. Upon clinically screening the patient's drug chart, he noticed that the patient was currently taking Apixaban (blood thinning medication). After highlighting this to the pharmacist, he discussed it with the doctors, resulting in the medication being withheld whilst the cause of the active bleed was investigated.

Re-evaluating how they provided pharmaceutical care to patients resulted in the trainees realising that their patients did not always present as perfect 'textbook cases'. Hence, clinical guidelines and recommended treatment pathways could not always be applied to each patient, particularly if the patient had multiple long-term conditions. This enabled the trainees to learn about the importance of providing personalised individual care for each patient based on their medical condition(s) and lifestyle choices, which led to them interacting with patients in different ways.

"…it [the placement] enables her [PRB] to see a slightly different side and think about things in a different way…she ended up seeing patients less as drug charts and more as patients…" BCONS

This was viewed as a positive change as patient care was perceived to have been enhanced during the longitudinal placement. There were no accounts of how patient care had been put at risk or quality reduced during the placement. Rather, it appeared that patient care had been improved through the wards receiving an enhanced pharmacy service. Common interventions the pre-registration pharmacists carried out included: optimising medicines, counselling patients and providing more effective discharge service.

"…I think it over all improves the patient experience…the more professionals who are involved in it makes it safer and I think the patients would like it as well" ACONS

Spending more time with patients meant that trainees could relate to them in more meaningful ways, often taking the time to chat to the patient about their family and how they were doing generally. The pre-registration pharmacists found that this began to build a better level of trust with their patients, who they thought were then more likely to be honest about their adherence, experience of side-effects or beliefs about their medicines; ultimately leading to a better use of medicines.

The trainees had the opportunity to review every patient on the ward (something which the ward pharmacist would not have the time to do in a 2-hour visit). They could ask the staff questions and did not need to spend long periods of time trawling through patients' notes to understand their clinical condition(s). The improved relationship between the trainees and ward staff appeared to enhance patient safety through promoting honesty between the junior doctors and pre-registration pharmacists.

"…I've built up a relationship with some of the junior doctors…we'd just discuss things and I'd go to them with a question…'is there a reason why they [consultant] chose this antibiotic?'…sometimes…the reason was 'I'm not sure, but that's what he [consultant] told me to prescribe, so I'll find out and get back to you' but I just wonder whether, had we not had a bit of a relationship…whether they would have been as honest…" B14

7.4.3.4.3 Patient discharges

In addition to providing a more holistic pharmacy service to patients, the pre-registration pharmacists also provided a more efficient discharge service. Due to the all-day presence of the trainees on the ward and the length of time they were based there, they were able to develop a greater appreciation and understanding of how the discharge process on the ward worked, particularly its complexity for older patients. The trainees described how their prior perceptions regarding patient discharge were flawed and saw the potential for their role to contribute to a more proactive and efficient patient discharge service.

"…now I understand what everyone else does in the hospital and why they make certain decisions…So things like late discharges…before I used to go 'argh, clearly they'd [doctors] know if a person's going home' but now I know that [is not the case]…the nurses also explained…how much they get charged if there's a failed [discharge] if they book transport…so I think it's put…a sense of urgency for me to complete tasks cos… you don't want this responsibility…if everyone's all done their bit and it's just pharmacy that's not done theirs…" A7

The ability of the trainees to turnaround discharges in a timelier manner was noticed by all staff, particularly the pharmacists who acknowledged the trainees' presence contributed to fewer delayed or failed discharges due to medicines. The trainees could also discuss the medicines with the patient before dispensing took place. This reduced the dispensary workload and appeared to save both time and money; ultimately resulting in patients being discharged sooner. The trainees were able to acquire the discharge information through attending the board rounds. This meant nurses' time was not taken away from caring for sick patients to chase the pharmacy team for discharges. Hence, the pressure on nurses for facilitating discharge was reduced.

7.4.4 Institutionalisation

Participants believed that the longitudinal ward placement should be incorporated into the pre-registration pharmacist training programmes at both hospitals the following year. The longitudinal placement was viewed as the future model of hospital pre-registration pharmacist training and recommendations were provided for institutionalisation as part of standard practice. Recommendations included, the preparation, length and timing, as well as the desirable qualities of the people involved in delivering and participating in the longitudinal ward placement.

7.4.4.1 Continuation of the placement

Every participant recommended that the longitudinal placement should continue as part of the hospital pre-registration training programme. It was viewed as the direction of travel for the pharmacy profession as it improved the learning experience and upheld patient safety. The placement shaped the trainees into better future pharmacists who understood the value of becoming part of the ward team. This led to them using their acquired knowledge and skills to provide an enhanced pharmacy service to patients.

“it’s [the placement] got to make a better pharmacist at the end. To have an understanding of… the entire team on the ward, the patient journey…the valuable input the pharmacy element is…that makes a big impact…” BDS

The future of hospital pharmacists’ practice was viewed as being located on the ward, working as part of the ward team. Therefore, training on the hospital ward would lead to better patient outcomes if pharmacists became part of the ward teams.

“…she’s a member of the team, not just someone who comes in to troubleshoot…[it] is the future; having a ward based pharmacist…they can push things forward… figure out problems…they can only do that if they know us [ward staff]…” BCONS

7.4.4.2 Preparation for the placement

Prior to the start of their ward placement, the trainees agreed that they needed to spend time working in the pharmacy department first. This would allow them to build relationships with the pharmacy team and learn how to perform the necessary pharmacy competencies such as dispensing, medicines reconciliation (MR), ordering medication and transcribing a drug chart. This would support the trainees to be more useful to the ward team during their placement.

7.4.4.3 Length of the placement

According to PRA and PRB, 13-weeks was the optimum length for the ward placement. If the placement was any shorter, they would not have had the time to properly build relationships with the ward team and participate in all their desired learning opportunities. PRC recommended that the placement length should be reduced to 10-weeks because his learning and development did not continue to progress during the last 3 weeks of his placement.

"…after six weeks the pre-reg will…get the hang of things and … there will be the temptation [for the pharmacy department]…[to be] left on the ward by yourself which is really not the best thing…everything can be actioned within ten weeks…" C14

Shortening or breaking up the placement was not an attractive option for the ward staff who found the independent practice towards the end of the placement was beneficial for the trainees, patients and themselves. The exception to this was APT2, who recommended that the longitudinal ward placement should be broken down into shorter sections, such as three 4-week blocks interspersed throughout the year. The rationale behind this was, this model would better reflect the working practices of hospital pharmacists, who often must work across multiple clinical areas for short time periods.

7.4.4.4 Timing of the placement

PRA commenced her placement in November and recommended that it should have started later in the training year so that she could be more useful to the ward when she arrived. However, she acknowledged that the benefit of doing it earlier meant that it influenced her later rotations and training. PRB and PRC commenced their placement after Christmas, which they found was a suitable time in their training timetable because they had completed their pharmacy-related competencies, so could be more useful to the ward team and were not distracted by the registration assessment.

Staff recognised that it was important for the trainees to become embedded in the pharmacy team prior to commencing their longitudinal placement. Some staff believed that once the pharmacy-related competencies were achieved, the longitudinal placement could commence, even if this was before Christmas. Avoiding the placement running into late May and early June was preferable since the pre-registration pharmacists would likely be using this time to revise, rather than trying to seek out learning opportunities on the ward.

7.4.4.5 Qualities of the ward and ward staff

In order to incorporate the longitudinal placement as part of the standard pre-registration pharmacist training programme, the desirable qualities of a potential host ward were identified; the ward should be generalist (rather than specialist) to reflect the generalist nature of the registration assessment.

The trainees and nursing staff favoured wards that had a low patient turnover, enabling the trainees to build a rapport with the patients over time. However, BWP, believed the placement could work well on wards which had higher patient turnover. These wards would likely be generalist and would have a greater pharmacy presence compared to wards with a lower patient turnover.

As well as the qualities of the ward itself, the qualities of the ward staff were also important when considering which wards should be selected to host a longitudinal placement. The ward staff should be part of a relatively stable

team with a core group of individuals who were committed to the ward long-term.

"…the staff have to be welcoming…and approachable and friendly…it has to be a ward where…pharmacy input is needed…I think that the ward sister has to be…dedicated to development of new members of staff …" C14

The learning environment on the ward should be positive; some wards are already set-up to accept and train learners effectively so these areas may be more willing and keener to host a longitudinal pre-registration pharmacist placement. If the learning environment is hostile towards trainees, then a 13-week placement would be a long and less enjoyable experience for the pre-registration pharmacists.

Concerns were raised over whether a longitudinal placement would be effective on a ward where the input of the pharmacy team was not valued i.e. the ward staff were not 'pro pharmacy'. The views and attitudes of the medical and nursing teams on the ward should therefore be considered when selecting a ward for hosting the placement. Wards which are led by junior consultants may be more appropriate as they have more time than senior consultants and therefore may be more willing to invest in training activities.

"…befriend a consultant who's going to drive it forward…pick a ward…where the consultants are very approachable…it's all [down to] who leads it. You've got to have somebody who's going to show an interest in it [and] has a bit of time…" BCONS

7.4.4.6 Qualities of the ward pharmacist

The ward pharmacist should enjoy teaching, be good at identifying potential learning opportunities, be passionate about developing people, approachable, friendly and have good communication skills.

"…if [the ward pharmacist] doesn't enjoy teaching, then this project…would be very one-sided. I will…just be doing duties without gaining anything from it. But because the pharmacist that I've been with likes teaching and

explaining stuff I really benefit…I don't see it as me just going on there to just perform tasks or duties, I go there to learn…" C8

The ward pharmacist also needed to be sufficiently senior and dedicated to that placement ward to give the pre-registration pharmacist some consistency in their supervision and to convey the 'pre-registration' status of the trainees to ward staff. The ward sister (CWS) cautioned having ward pharmacists who were undertaking multiple roles and responsibilities as this appeared to have negative effects on the training opportunities for the pre-registration pharmacist.

"…she's [CWP] on a huge course and trying to do a job as well. I can see it's really tough for her…but someone always loses out on these things…if it's [placement] not set up [correctly] and I think this time it's the pre-reg student [PRC], that's the only person who has lost out on this…" CWS

7.4.4.7 Qualities of the pre-registration pharmacist

Qualities that the pre-registration pharmacists undertaking a longitudinal ward placement should display were listed by participants and included: enthusiasm, a proactive attitude, self-motivation, good interpersonal skills, a desire for learning, teamwork skills, ability to use ones' initiative, a long concentration span, good communication skills, being open-minded, sociable, aware of their limitations and be prepared to research answers to questions. They would also need to be adaptable to any unexpected learning opportunities that may arise on the ward.

Confidence and a willingness to be involved were also desirable qualities for the pre-registration pharmacists since their role, whist supernumerary, still involved supporting the workplace activities. The proactive attitude of the trainees in this study made them easy for the staff to work with.

"They have to have a degree of confidence, but not over confidence, they have to be…self-motivated…a willingness to go out and ask…an ability to roll up their sleeves and get on with it…do the nitty gritty…" BWP

Not all pre-registration pharmacists would potentially suit the longitudinal placement as a training model, particularly if they had a nervous disposition and could find the responsibility difficult to manage. Additionally, less confident trainees would be at risk of becoming a burden to the ward staff, who would need to give additional support. This could be a further challenge for the ward staff who were also responsible for training students from their own professions.

The pre-registration pharmacists in this study were self-motivated, became part of the team and were a useful resource to the staff and patients. They were described as helpful, capable, reliable, friendly, nice, likeable, self-motivated, flexible, approachable, hard workers, professional, punctual and engaged. The staff made it clear that the results of the placement may have been different had the trainees been less motivated.

"…There was never a sense that she [PRB] was a burden, a hindrance…but I think you have to understand that is part of her personality. Whether that would have been different with someone different, I don't know." BWP

All the ward staff emphasised that the success of the placement was largely dependent on the personality of the trainee. Those who are enthusiastic and keen to make the most of the opportunities would be the people who got the most out of the experience. If the pre-registration pharmacists did not grasp the opportunities to learn on the ward, then they were at risk of the placement becoming a shadowing exercise.

7.4.4.8 Support and supervision

Both ward sisters reported uncertainty over the level of support and supervision the trainees would need from themselves and the ward pharmacist. At hospital 1, the trainees (PRA and PRC) did not receive the amount of pharmacist supervision and educational support the ward sister (AWS, CWS) expected.

Members of the medical team at both hospitals also recommended there should be greater clarity regarding their roles in supporting the pre-registration pharmacists. The medical team also wanted more

information about the pre-registration pharmacist training programme and structure generally. This would help the doctors to better define what is expected from them and the trainee during the longitudinal placement.

"…I think we have…[to] define as to what is expected from both sides, the trainee as well as the doctors…From my point of view…should I be talking to her a bit more? Or asking her more questions? Or liaising with her…in a…more structured way? And also from her point of view…should she be doing a couple of ward rounds a week?..." ACONS

The presence of the pre-registration pharmacists on the ward round created an additional level of pressure for the consultants, who were also responsible for teaching the junior doctors and medical students. The logistics of having a pre-registration pharmacist present on a ward round, which can take up to four hours, was also a challenge for the trainees and ward pharmacists. A suggestion was made to have the pre-registration pharmacist join a ward round once a week or just occasionally with different consultants.

7.5 Discussion

7.5.1 Main findings

The longitudinal placement was implemented largely as the design intended by each of the pre-registration pharmacists and ward staff across the two hospitals. Local adaptations to the placement were made as a result of the availability and experience of the ward pharmacist.

The longitudinal placement survived; none of the pre-registration pharmacists chose to finish their placement before the 13-weeks were completed and all went on to recommend it should be incorporated as part of the hospital pre-registration pharmacist training. The pre-registration pharmacists became part of the ward team, leading to an enriched learning experience, improved professional development and an enhanced pharmacy service to the ward. The trainees acquiring membership within the ward team was the mechanism through which the placement was able to thrive in this research setting.

Recommendations for the modification of the placement design and implementation in other hospitals were made. These focused largely on the qualities of the individuals implementing the placement. Enablers for supporting longitudinal placements to be implemented successfully in the future included: ward staff having a 'pro pharmacy' attitude, a ward pharmacist who is experienced and passionate about developing people and a pre-registration pharmacist who is motivated to become a part of the ward team. These enablers emphasise the need for sufficient stakeholder buy-in, in order to facilitate successful implementation of a longitudinal ward placement.

Unexpectedly, the longitudinal placement brought additional benefits for patients receiving treatment on these wards. Reports of fewer failed discharges, more patient counselling and more medicine-related queries being answered by the trainees took place. This could indicate that the patient experience was likely to be safer and superior to the contemporary pharmacy service these wards received prior to the placement. However, the ward staff did acknowledge that these additional benefits largely arose as a result of the drive, motivation and competence of the pre-registration pharmacists involved in this study and that these benefits may not be observed with trainees who are not self-motivated to engage in ward activities.

7.5.2 Strengths and limitations

Beta testing of the intervention allowed the longitudinal placement's local viability and institutionalisation to be explored. Longitudinal qualitative research methods enabled the placement to be evaluated early-on and frequently throughout implementation, as recommended in design-based research (McKenney and Reeves, 2018d). Collecting data from the pre-registration pharmacists at intervals during their placement, revealed the rough time point each of the trainees acquired membership in the ward team. These results established a link between membership in the ward team and the viability of the placement.

The study collected data from pre-registration pharmacists at logical time points, with sufficient space between them to have allowed a change to occur, following the principles of qualitative longitudinal research (Neale, 2019a). Data was also collected from staff members working closely with the pre-registration pharmacists during the placement, thus triangulating the data and in nearly all cases, confirming the pre-registration pharmacists' perceptions of their experiences; particularly their membership within the ward team.

Due to the dual role of the researcher (HK) as designer and evaluator of the placement, a bespoke approach to data analysis was developed. This was informed by the trajectory approach, using framework and abductive analysis (Gale *et al.*, 2013; Tavory and Timmermans, 2014a; Grossoehme and Lipstein, 2016). Research into qualitative longitudinal analysis is a relatively new field and is still being defined. Hence, this method of analysis will contribute to a wider conversation on how researchers can conduct longitudinal qualitative analysis on data generated in longitudinal studies.

This study only implemented the longitudinal 13-week ward placement at two hospitals with three pre-registration pharmacists. The small numbers of participants in the study was ethical, since this was the first time the placement was introduced.

The staff working on the wards where the placement was implemented were heavily involved in the placement design. The involvement of these stakeholders during the design phases improved the likelihood that the longitudinal placement would be implemented successfully. Hence, the conditions for introducing a longitudinal ward placement were optimised for the purposes of this research study. This may mean that the results may not be generalisable to other hospitals, wards and pre-registration pharmacists. However, detailed descriptions of the ward context have been provided to help readers determine if these results are transferable to other settings.

Social desirability bias may have been present in this study because of the already established good working relationship between the researcher (HK) and the ward staff implementing the placement at both hospitals. There is

limited disconfirming evidence present in this dataset, which could indicate that participants may have been unwilling to criticise the placement to the researcher. The researcher endeavoured to account for the possibility of social desirability bias by emphasising the importance of honesty from the participants at the start of each interview. However, it is possible that some participants chose not to disclose any criticisms or reservations about the placement directly to the researcher; hence this is presented as a limitation of this study.

In addition, the trainees were aware that they, together with their tutor and the ward team, were being interviewed by the researcher. The trainees were described as self-motivated, friendly and wanting to get ‘stuck-in’. The presence of the researcher may have increased the likelihood that these trainees made more of a concerted effort during the longitudinal placement than trainees who might otherwise not be followed-up by a researcher. It is therefore possible that social desirability bias may have also affected the extent of engagement of the trainees. As well as this, selection bias may have been present in this study as the pre-registration pharmacists all volunteered to participate in the longitudinal placement.

Prior to the implementation of the longitudinal placement, the researcher did not undertake any observations or interviews with ward staff to establish whether the wards nominated to participate in this study operated as a community of practice. Ideally, the researcher would have sought to understand the extent to which the joint enterprise, shared repertoire and mutual engagement activities, took place between staff members. However, due to constrained timeframes with respect to implementing the longitudinal ward placements, it was not possible to conduct this research prior to the placement commencing. Instead, evidence to suggest the presence of a community of practice on both placement wards emerged during interviews with the pre-registration pharmacists and ward staff at the end of the longitudinal ward placement (week 14). Social interactions, knowledge sharing, knowledge creation and identity building were all present between the trainees and the ward staff, confirming that the wards were functioning as

communities of practice, which the trainees became members of (Li *et al.*, 2009a).

The wards selected to participate in this study were chosen by the deputy chief pharmacists at both hospitals because of their already existing positive relationship with the pharmacy department. They were wards that the trainees identified as being ‘pro pharmacy’. It is possible that if the longitudinal placement were to be repeated on wards that were not ‘pro pharmacy’, the results generated could be different. This could have resulted in the trainees being alienated and marginalised (Terry *et al.*, 2020). Thus, preventing them from gaining membership by staff members already part of the team. This has been known to occur in communities of practice (Wenger, 1998).

Finally, the placement design was crafted carefully and thoroughly over a series of months with a team of multi-disciplinary stakeholders. The same level of detailed planning does not go into short rotational blocks during the pre-registration year. Therefore, introducing a ward placement that has been designed with a multi-disciplinary team and has an educational ethos, into a short block rotational training programme, may artificially enhance the experience.

7.5.3 Implementation

The workbook was an effective way of communicating the longitudinal placement design to the pre-registration pharmacists and staff supporting the placement. The trainees did not need to refer to the workbook for guidance on how to implement the placement from the middle of their placement onwards. This was due to the trainees’ ability to establish a routine for themselves and build effective working relationships with the ward team, which enabled them to approach individual members of staff directly to seek out learning opportunities that they wanted to pursue. This suggests that pre-registration pharmacists are better able to make the most of opportunities to learn on the ward when they know and are known by the ward staff. Hence, once the trainees became part of the ward team, there was no ongoing reliance on the workbook.

The uptake of the workplace assessment tools varied between the trainees. Uptake appeared to be influenced by the ward pharmacist and pre-registration tutor. At hospital 1, the trainees were encouraged to use their tools more by the ward pharmacist and their tutors, than at hospital 2. The pharmacists at hospital 1 identified that learning to use the workplace assessment tools during pre-registration training would support the trainees during their diploma later on in their career.

Being welcomed, accepted and made to feel like you belong is one of the enablers of a community of practice that supports student and novice nurses to develop in the healthcare setting (Ranse and Grealish, 2007; Jørgensen and Hadders, 2015; Terry *et al.*, 2020). The pre-registration pharmacists' arrival on the wards was expected. They were introduced formally at the board round. The 1-week induction at the start of the placement was organised and facilitated by the ward sister at each hospital. This formal arrangement required the ward sisters to provide access to the staff members and cultural practices that were part of the ward community of practice. Therefore, through the induction programme and ongoing oversight of the trainees, the ward sisters acted as 'brokers'; introducing the pre-registration pharmacists to the ward community of practice (Wenger, 1999 p.105).

At hospital 1, the ward sister (AWS, CWS), appeared to be the sole broker responsible for providing access to the ward community of practice. At hospital 2, the ward sister (BWS) and ward pharmacist (BWP), appeared to have a joint 'brokering' role. This is likely due to the ward pharmacist (BWP) having good working relationships with the ward staff and already being considered a member of the team due to the number of years he had been provided a pharmacy service to that ward. Hence, it was natural for both the pharmacist and sister to be involved in supporting PRB enter into the ward community of practice. This contrasts to the role of the pharmacists at hospital 1, who were rotational and had not been working on the ward for long periods of time prior to the placement commencing. Hence, their ability to 'broker' PRA or PRC into the ward community of practice was made more

difficult when the pharmacists themselves had not had the opportunity to embed into the ward team.

PRB identified becoming a part of the ward team at an earlier stage of the longitudinal placement than PRA and PRC. This may have been because PRB had both the pharmacist and sister acting as brokers for her. This highlights the need for the ward team to be involved in the planning and delivery of the placement; particularly the ward induction.

Throughout their placement, the trainees continued to emphasise the importance of maintaining effective working relationships with the pharmacy team. The trainees retained their identities as members of the hospital pharmacy department. They recognised that in order to carry out their role on the ward effectively, they needed access to, support from pharmacists, information/knowledge about medicines and medicines from the dispensary. The longitudinal placement provided the opportunity for the pre-registration pharmacists to move between the pharmacy department and the ward community of practice, applying their knowledge of one to enhance the way they served the other. Landscapes of practice describes how healthcare professionals are expected to move between different communities of practice and have sufficient competence to practise effectively in each (Wenger-Trayner and Wenger-Trayner, 2014). Through navigating the pharmacy department and ward communities of practice, the trainees were able to develop as healthcare professionals and establish their identity in both settings through acquiring trust, responsibility, confidence and independence. Working as members of both teams is where the future role of hospital pharmacists' practice is located (Lord Carter of Coles, 2016).

The board round and consultant ward rounds were key features of the placement design that were implemented largely as intended. The trainees attended them regularly, actively participating towards the end of their placement. However, PRC's ability to attend the board round and consultant ward rounds towards the end of his placement was affected by the absence of a ward pharmacist. PRC did not have the time to attend the board round or consultant ward rounds, since he needed to undertake other

responsibilities such as MRs and ordering. It is appropriate that the presence of the ward pharmacist decreases over the course of the longitudinal placement, to allow the pre-registration pharmacist to have more autonomy. However, it is important that ward pharmacist support is not withdrawn too early or unexpectedly. Conversations between the ward pharmacist, tutor and trainee about supervision and autonomy will need to take place at regular intervals during the placement. It may be that the workplace assessment tools could be used to facilitate these conversations. The trainee's performance in these assessments could be used to determine how and when they are given more autonomy by the ward pharmacist. Pharmacist support should not be withdrawn before the pre-registration pharmacist has had the opportunity to build their confidence, earn the trust of the ward team, practise some activities independently and begun establishing their identity.

Characteristics which indicate a community of practice has formed include both knowledge-sharing and knowledge-creation (Li *et al.*, 2009a). Within the first few weeks of the longitudinal placement commencing, the pre-registration pharmacists were sharing their knowledge of medicines with members of the ward team. This indicates that the pre-registration pharmacists' trajectory from the start of the placement was focused on entering into the ward community of practice. The type of knowledge shared between the pre-registration pharmacists and ward staff evolved, becoming more complex over time. This led the trainees to establish new ways of doing things, such as developing 'workarounds' to ensure that medicines arrived swiftly and promptly on the ward. The board and ward rounds were the formal events which saw the ward staff share their knowledge with the trainees in a structured way. These events were very influential as the knowledge acquired enriched the trainees' learning experience. This type of training on the board and ward round, forced the trainees to learn and think for themselves. The board round provided the trainees with more information about the medical and social situation of each patient. Access to this information enhanced the service they were able to provide, as the trainees could identify which medicines might need to be withheld or adjusted.

The placement was implemented as intended, one adaptation to the placement was observed. During PRA's placement, she visited other wards within the hospital to support the medicines reconciliations (MRs) process, rather than remaining solely on the placement ward, as the design intended. At the start of her longitudinal placement, PRA was supervised by a recently qualified pharmacist who was present on the ward for only very short periods of time and had many other responsibilities within the hospital. The lack of experience of this pharmacist will most likely have affected his ability to direct and support PRA in her role on the ward. Situated learning theory describes the importance of the mentor supporting an apprentice in a community of practice. If apprentices/newcomers do not know what to do in the community, or lack the competence to be useful, as was the case with PRA, this frustrates their efforts to become part of the community of practice (Thrysoe *et al.*, 2012; Jørgensen and Hadders, 2015; Terry *et al.*, 2020). Hence, in the case of PRA, she sought guidance from pharmacists on other wards and looked for ways to be useful to the pharmacy team in these other areas. However, this behaviour changed when PRA's pre-registration tutor (APT1), was allocated to the placement ward. APT1 was experienced, passionate about developing people and had a good working relationship with the ward sister. This resulted in PRA receiving dedicated one-to-one training and support from this pharmacist, that helped her learn how to become a useful member of the ward team and thus integrate into the ward community of practice.

The differences in the implementation of each longitudinal placement appeared to be influenced by the ward pharmacist. Legitimate peripheral participation describes how newcomers need to be supported by more experienced members of a community to progress from apprentice to mastery (Lave and Wenger, 1991). The ward pharmacist support PRB received was more in-depth to that of PRA and PRC, hence her ability to move into membership within the ward team happened sooner. If the ward pharmacist is unavailable, too junior or too busy, then they are not able to support the pre-registration pharmacist to legitimately participate in the ward community. Nurses and doctors cannot support pre-registration pharmacists

to undergo legitimate peripheral participation. This is because the pre-registration pharmacist is learning how to become a pharmacist and consequently, needs input from a pharmacist to develop their pharmacist skills. The results from this study indicate that pharmacist support needs to be concentrated at the start of the placement. Gradually, over time, this should reduce in line with the pre-registration pharmacist's development.

A friendly environment, sufficient support from the ward team and being welcomed are all enablers for supporting student and novice nurses to develop their knowledge and skills in a community of practice (Terry *et al.*, 2020). The ward teams at both hospitals were supportive learning environments; they were friendly, welcoming, keen to build relationships and involve the trainees in activities on the ward. It appears from this small-scale study that the same is true for pre-registration pharmacists seeking to develop as healthcare professionals. Additionally, the pre-registration pharmacists found that they became more comfortable practising on the ward when other staff members were aware of their role and limitations. This is an important finding, given that it is not reported elsewhere in the literature.

7.5.4 Local viability

It was the middle of their placement before the trainees began to feel like they were part of the ward team. Situated learning theory emphasises that it takes time for a person to become a member of a community of practice (Lave and Wenger, 1991). Certain features of the placement design appeared to influence the speed and extent to which each of the trainees was able to acquire membership within the ward team. These included: the presence/role of the ward pharmacist, the ability of the trainee to be useful, the extent to which the trainees were trusted and given responsibilities and the rate at which the trainees developed their role and identity on the ward.

Landscapes of practice describes how three 'modes of identification' can be used to determine the extent to which a person is considered a member of a community of practice. These are: engagement, imagination and alignment (Wenger-Trayner and Wenger-Trayner, 2014). Each of the pre-registration pharmacists were engaged with the practice of the ward and used their

imagination to participate meaningfully by creating ‘workarounds’ to improve the staff and patient experience. The trainees appeared to partially influence the practice of the staff nurses and junior doctors. Through questioning the prescribing decisions of the consultants with the junior doctors, PRB was able to influence the junior doctor’s approach to prescribing medicines. However, the ability of the trainees to influence senior members of the ward team (alignment) appeared to be limited. This may have been due to the trainee’s ‘pre-registration’ status and this is perhaps appropriate, given their position as a trainee and not a registered healthcare professional. Hence, the ability of pre-registration pharmacists to fully integrate into hospital ward communities of practice may be limited by their ‘pre-registration status’. However, the ‘pre-registration’ status is not a barrier to the trainees building relationships with the ward team, sharing knowledge and participating in useful activities that allows the community to achieve their joint enterprise (patient care). Therefore, whilst pre-registration pharmacists may not be able to influence the practice of all members of the ward community of practice, this study has shown that there are benefits for the trainee and the ward, through the pre-registration pharmacists being able to engage and imagine.

Once the trainees had started to become part of the team and transition into membership in the community of practice, they began to experience an enriched learning experience. Better social environments that facilitate learning are seen in communities of practice (Wenger-Trayner and Wenger-Trayner, 2018). Hence, becoming part of the team and a member of the ward community of practice gave the pre-registration pharmacists access to a plethora of learning opportunities. These would have been unavailable to them in the rotational training model. Learning opportunities included: board rounds, medicines administration rounds, bed managers meetings, occupational home visits and most notably, the consultant ward round. The doctors included the trainees in their teaching on the ward rounds, were approachable, patient and offered learning opportunities to the trainees beyond the ward round (outpatient clinics). Acquiring knowledge about the consultants’ prescribing habits helped PRB feel more useful to the team and gave her a sense of purpose. The pre-registration pharmacists made a direct

link between becoming part of the ward team and the enriched learning experience. This led the trainees to believe that their learning experience during the longitudinal placement was superior to their rotational training because of their access to the ward team, which they had earned through membership. The placement enabled the trainees to practise applying their knowledge in the 'real-life setting' and making decisions. The trainees knew that their work was still being checked by a pharmacist, which provided a safety net, if needed.

The trainees also believed that they were more prepared for the registration assessment as a result of the longitudinal placement. This was because they had had more exposure to clinical decision-making and had not spent the majority of their time performing medicines reconciliations. This indicates that undertaking medicines reconciliations –whilst it may be a useful task- does not, on its own, optimise the learning experience. The trainees benefitted from being able to attend board and ward rounds, from answering medicines-related queries and from spending time learning and working alongside other members of the ward team. Over time, the trainees earned the trust of the ward team and so were given the opportunity to practise more independently on the ward. Securing this trust, leading to increased responsibilities and independence, is a repeating theme in the longitudinal placement literature (Thistlethwaite *et al.*, 2013).

The confidence and independence of the pre-registration pharmacists built over time. It took at least 7-weeks until they had become established. Therefore, these results call into question the justification for short block rotations during the pre-registration year and short experiential placements as part of the MPharm degree. Social learning theory, the literature surrounding longitudinal placements and the results of this study, all indicate that there are more benefits to trainees from longer placements, which support trainees to become part of a team (Wenger, 1998; Thistlethwaite *et al.*, 2013).

Unexpectedly, the pre-registration pharmacists provided an improved pharmacy service to the wards. Patient care was enhanced and patient

discharges happened in a timelier manner. The ability of the trainees to improve the pharmacy service in this way is a testament to them and the ward team. The pre-registration pharmacists' confidence and ability to practise independently on the ward improved during the longitudinal placement, as a result of their membership in the team, which gave them greater access to the shared repertoire. This led to the trainees being able to provide a greater level of patient-centred pharmacy care compared to pharmacists carrying out 2-hour ward visits. These results have implications for hospital pharmacist working practices. Brief ward visits do not allow pharmacists to become members of the ward team, thus preventing pharmacists from accessing all the relevant information to provide a patient-centred pharmacy service to patients.

7.5.5 Institutionalisation

Beta testing an intervention involves exploring the concept of tolerance. Tolerance describes how precisely specific elements of the intervention need to be implemented so that, when replicated, the intervention meets its outcomes. Interventions with a high tolerance mean that when replicated, they do need to be implemented with a high degree of accuracy. Interventions with a low tolerance need to be implemented very precisely and with a high degree of accuracy to meet the outcomes.

In order to determine whether/how the longitudinal 13-week ward placement could become institutionalised, a part of standard practice, it is important to consider the design of the placement in the context of its tolerance.

The participants in this study advocated for the longitudinal 13-week ward placement to become part of hospital pre-registration pharmacist training at both hospitals. Recommendations were given on different aspects of the placement's design as to how it could be improved to support its ability to become a part of standard practice.

The length of the placement (13-weeks) was optimal to enable the trainees to first become part of the ward team, learn and develop as a professional prior to improving the ward pharmacy service. Whilst the final few weeks of

the placement were less beneficial for the trainees' learning from their perspective, this was when they were the most useful to the ward team. It is possible that the trainees failed to acknowledge that whilst they were not learning as much 'clinical knowledge' towards the end of their placement, they were developing other skills, namely learning how to practise autonomously.

Shortening the placement length may have reduced the benefits of the placement to the ward. This could have resulted in less investment from staff earlier in the placement. It is a natural expectation that ward staff would like to have trainees based on the ward long enough for them to see a 'return on their investment'. Therefore, the length of the longitudinal placement is likely to be a design feature that has a low tolerance and should remain at 13-weeks.

The placements were implemented at different times in the pre-registration year (week 14, 23 and 27). All trainees advocated that the placement should occur in the middle of the training year, to allow time to settle into the pre-registration pharmacist role within the pharmacy department and also avoid proximity to the registration assessment. The placement may be implemented flexibly within the middle of the training year, indicating that the exact timing of the placement is likely to have a medium degree of tolerance.

The main desirable qualities of the ward hosting the placement were described as: being 'pro pharmacy' and 'generalist' with a 'low patient turnover' and 'low staff turnover'. However, there was some disagreement amongst participants in this study about the importance of the ward having low patient turnover. On the one hand, pre-registration pharmacists and nurses emphasised the value of establishing patient-staff relationships and being able to understand the whole patient journey from admission to discharge. On the other hand, one of the ward pharmacists (BWP) believed that it would not matter if the patient turnover was high, because there would be other associated benefits, such as a wider variety of patient conditions. Study participants considered the other ward qualities, namely 'pro pharmacy', 'generalist' and 'low staff turnover' to be essential for successful

outcomes of a longitudinal placement. However, it is not possible to establish the level of tolerance of the ward environment data from this study. These characteristics will need testing in subsequent iterations of the longitudinal placement in order to determine their respective tolerance levels.

The supervision and support trainees receive from each member of the ward team should be clear, realistic and consistent during the placement. The placement design and development discussions need to place greater emphasis on the role of the ward pharmacist, particularly at the start of the placement. Support and supervision provided by a pharmacist, nurse and doctor throughout the placement, appears to be the optimal model for implementation. Based on the results of this study, it is not possible to estimate the tolerance level of the support and supervision requirements during the longitudinal placement. Further research in this area will need conducting to determine this.

The qualities and characteristics of the pre-registration pharmacists undertaking the longitudinal ward placement were important to the ward team. They believed that the placement would not work well with trainees who were not motivated to become part of the team and become involved with the activities on the ward. Since the pre-registration pharmacists in this study volunteered, they were highly motivated to participate. It is likely that only through repeating the placement with other pre-registration pharmacists, who did not volunteer, will it be possible to determine whether the trainees' motivation to participate had any bearing on the outcome. Hence, the tolerance with respect to the qualities of the pre-registration pharmacists undertaking the placement remains unknown.

7.5.6 Summary

This study identified that the 13-week longitudinal ward placement held benefits for the:

- Pre-registration pharmacist's learning and development.
- Ward team, who had access to a member of pharmacy staff on a consistent basis.

- Patients, who received a more proactive and timely discharge service.

The concept of tolerance was explored which identified that there are some design features of the longitudinal placement which were reported to have a:

- Low tolerance - placement length.
- Medium tolerance - timing of the placement.
- Unknown tolerance – ward environment, supervision requirements, qualities of the pre-registration pharmacists undertaking the placement.

In order to establish which features of the placement design are ‘essential’ and which are ‘desirable’ for ensuring successful implementation of longitudinal 13-week ward placements, more placements should be implemented and additional data gathered in order to inform this process.

The next chapter discusses the contribution to knowledge this research has made and provides an outline for the direction of future research studies.

Chapter 8 Discussion

8.1. Synopsis

This is one of the first pharmacy education studies to have used the DBR approach in pharmacy education globally and the very first in the UK. The DBR approach informed the design of the research undertaken in this thesis:

- Chapter 1: *analysis and exploration* of the literature.
- Chapter 2: explanation of the DBR approach.
- Chapter 3: explanation of learning theories to inform DBR approach.
- Chapter 4: *analysis and exploration* of stakeholder views.
- Chapter 5: *design and construction* of the ward placement.
- Chapter 6: prototype placement *implementation and evaluation*.
- Chapter 7: longitudinal placement *implementation and evaluation*.

The aim of this thesis was to develop an alternative model for hospital pre-registration pharmacist training, which usually consists of a series of short block rotations through different areas. An alternative model to short block rotations in medical education is the longitudinal placement. Longitudinal placements afford trainees more time in the same environment, allowing them to build relationships with staff members. Learning theories emphasise the importance of giving trainees time in a community of practice so that they can become members and access learning opportunities.

Barriers to developing an alternative training model, a ward placement, for pre-registration pharmacists includes the registration assessment. Enablers for introducing a ward placement included the potential for the pre-registration pharmacist to become part of the ward team. In collaboration with the researcher, key stakeholders designed and constructed a ward placement. Novel methods facilitated this process, thus contributing new knowledge to the design and construction phase of the DBR approach.

Alpha testing a 4-week prototype placement established the placement's soundness; the design was appropriate for pre-registration pharmacist training. Beta testing the 13-week longitudinal ward placement revealed that the placement's viability was connected to the pre-registration pharmacists becoming members of the ward team. Innovative methods of data analysis

were used, thus contributing knowledge to longitudinal qualitative research. Pre-registration pharmacists struggled to influence senior members of the ward team (alignment), suggesting their status as an unregistered healthcare professional may affect their ability to fully integrate into communities of practice.

This thesis has illuminated the shortcomings of short rotational hospital pre-registration training programmes and provided evidence to support the further development of longitudinal models of training for pharmacists. In the process, this research has contributed new knowledge to the DBR approach, qualitative longitudinal research and landscapes of practice.

8.2 Main discussion

8.2.1 Strengths and limitations of the research

The strengths of this research were: the involvement of stakeholders, the use of learning theories, the iterative nature of the studies and the innovative approaches to data analysis. However, the data generated may have been influenced by researcher bias, social desirability bias and selection bias, all of which are limitations. In addition, it is not possible to know at this stage, whether these findings can be considered generalisable.

Designing the ward placement was a lengthy and detailed process involving multiple stakeholders at both hospitals over a period of several months (chapter 5). The involvement of stakeholders in DBR indicates a practical and authentic response to the research aims and reflects the pragmatic philosophical underpinning of this research (Kelly, 2006; McKenney and Reeves, 2012f; Morgan, 2014).

Several learning theories were applied to the research, which enabled the research findings to be better understood in a wider context. Each study built upon the findings from the previous one, allowing a measured and detailed approach towards designing, implementing and evaluating the longitudinal placement. A range of methods and approaches to data analysis were used. These were tailored according to the research aim and objectives of each

study. This strengthened the trustworthiness of the data generated and is indicative of research which is underpinned by the DBR approach (Barab and Squire, 2004; McKenney and Reeves, 2012e; Creswell and Poth, 2017c).

To account for researcher bias, the researcher practised reflexivity during each study; highlighting the presence of her own ideas and assumptions regarding the research. This allowed additional measures to be put in place, to ensure these did not affect the overall study findings. Large quantities of qualitative data were collected and analysed thoroughly, with another member of the research team (JS) checking coding accuracy. Therefore, readers should have confidence that the analysis and interpretation of the data presented in this thesis is accurate.

The researcher was heavily involved in the design process, which is expected as part of the DBR approach. However, the involvement and influence of the researcher on the placement design, may be viewed as a limitation of the research. This may have affected the willingness of participants to express any criticism of the placement design to the researcher; social desirability bias. The researcher was aware of this and encouraged participants to provide honest accounts, but it is possible participants may have chosen not to disclose this information.

The pre-registration pharmacists volunteered to undertake the longitudinal ward placement, which potentially increased the likelihood of a positive outcome. Hence, selection bias may have affected the results generated. Consequently, these findings may not be transferable to other settings where pre-registration pharmacists are assigned to complete a longitudinal ward placement. However, the context of both placement wards has been extensively described, as have the characteristics of the trainees, pharmacists and staff working on these wards. This should enable readers to interpret these results in the context of their own practice setting, to determine whether these results are transferable. Additionally, the application of learning theories to the results generated also gives readers a

better understanding of the research context, supporting the transferability of these findings.

The reader determines the generalisability of findings in design-based research. In order for a reader to determine whether the results from a study are generalisable to their setting, there must be sufficient descriptions of the theoretical constructs, the intervention and the research context (McKenney and Reeves, 2012a).

This research has provided a comprehensive descriptive account of each of these factors to enable the reader to determine whether similar findings would be identified, if they implemented the longitudinal 13-week ward placement in their setting(s). Only once this research has been widely disseminated, will it be possible to determine whether these findings can be considered generalisable.

8.2.2 Design-based research

Chapter 4 identified possible features of the ward placement design, such as a clear structure. However, the thematic analysis of this data did not provide enough detail to inform the design requirements or propositions needed to construct the placement design. Currently, there is a lack of DBR literature describing *how* interventions are constructed, specifically, *how* researchers use data to construct an intervention.

In order to construct the placement design, detailed data was needed to inform the design requirements and propositions. Consequently, the framework method was applied to the 'design' data generated by the thematic analysis (Gale *et al.*, 2013). This allowed the relevant data pertaining to the placement's design to be extracted (chapter 5). The application of the framework method to a qualitative dataset to determine design requirements and propositions contributes to the DBR literature.

During framework analysis, whilst the design requirements and propositions were identified, a series of concerns relating to the placement design were also detected. This led to the creation of a third element to the framework, called 'design concerns'. These design concerns described design features

that the ward placement should not incorporate. Identifying these design concerns strengthened the placement design, leading to the accreditation of the placement by the GPhC. Thus, increasing the likelihood of its successful implementation. The identification of ‘design concerns’ as part of the design and construction process presents a novel contribution to the DBR literature and further research into their use is merited.

The DBR approach is time-consuming and complex since it involves research in the real-life context, which makes for a fragile research setting. These drawbacks may have prevented the DBR approach from being used by pharmacy education researchers to date. However, the findings from this thesis show that the DBR approach can be used effectively to design, implement and evaluate a pharmacy education intervention. DBR warrants further investigation as a possible approach for informing education research within pharmacy and other healthcare disciplines.

8.2.3 Hospital pre-registration training

Short rotational models in medical education foster a ‘trainee as a tourist’ phenomena, whereby students struggle to build relationships with the medical team and patients, apply their knowledge and acquire responsibilities (O’Brien, Cooke and Irby, 2007; Holmboe, Ginsburg and Bernabeo, 2011). Newly qualified pharmacists identified similar outcomes from their experiences of the short block rotational pre-registration pharmacist training programme in chapter 4. They described how short rotations fostered a culture of shadowing, which inhibited their ability to develop autonomy and contributed to them ‘feeling like a burden to the pharmacists’.

During the 13-week longitudinal placement, the pre-registration pharmacists described how it took them at least 3-4 weeks to settle onto the ward before they could begin to apply their knowledge and contribute meaningfully to the practice of the ward (chapter 7). Therefore, if it can take up to four weeks before the pre-registration pharmacist’s experience on the ward becomes meaningful; this calls into question the suitability of short ward rotations within pre-registration pharmacist training.

Pre-registration managers and chief pharmacists do not appear to be aware of some of the difficulties pre-registration pharmacists face through undertaking short rotations. Instead, they hailed the short block rotational model as a success, since pre-registration pharmacists were passing the registration assessment. Hence, they perceived no rationale for adopting an alternative training model. This is concerning as it suggests the pharmacists responsible for the education and training of the postgraduate workforce do not realise that; passing the registration assessment is not an indicator of an efficacious pre-registration training programme.

It appears the pre-registration training year is trying to serve two purposes: the first, to equip trainees to pass the registration assessment and the second, to prepare trainees for practice. Passing the registration assessment is not synonymous with being equipped to practise safely as a pharmacist.

Some pre-registration pharmacists were only interested in learning information that would help them pass the registration assessment (chapter 4). In medical education, it is widely accepted that assessment drives learning (Cooke *et al.*, 2006; Wormald *et al.*, 2009). Hence, positioning the registration assessment at the end of the pre-registration year may not support trainees to pursue learning opportunities that will help them prepare for practice. This is due to trainees focusing their efforts on revising for the exam, rather than seeking to acquire the experiences and develop the skills they will need for their future practice (Kinsey, 2020).

8.2.4 Barriers and enablers to introducing a ward placement

In chapter 4, pharmacists expressed concerns that a ward placement would reduce the quantity of rotations a pre-registration pharmacist could undertake. This could potentially limit their exposure to certain disease states and medicine groups, thereby affecting the trainee's ability to pass the registration assessment. The underlying assumption that frequent rotations provide more learning opportunities in medical education, applies to pre-registration pharmacist training (Holmboe, Ginsburg and Bernabeo, 2011).

Reassuringly, longitudinal placements in medical education are not associated with poorer academic performance. Student's marks in knowledge-based assessments are equivalent or better than those completing short block rotations (Walters *et al.*, 2012). Hence, whilst it is not possible to predict what effect the longitudinal placement might have on the ability of pre-registration pharmacists to pass the registration assessment; evidence from medical education suggests longitudinal placements are unlikely to affect academic performance. A possible reason for this, is that the knowledge gained and skills developed during a longitudinal placement cannot be effectively measured by a knowledge-based assessment (Walters *et al.*, 2012).

Other barriers to introducing a ward placement included whether pre-registration pharmacists could achieve performance standards during a ward placement. The accreditation of the placement by the GPhC overcame this. However, there may be cause for concern if chief pharmacists and pre-registration managers do not believe that performance standards are achievable during ward placements. This is important given that, in chapter 7, PRA described how she had been able to achieve more of the GPhC performance standards during her longitudinal placement than she had prior to commencing it.

In chapter 4, pharmacists were concerned that the supervision of pre-registration pharmacists by non-pharmacy staff during a ward placement would be inadequate. This concern did not materialise during the course of the longitudinal placement. It is possible that in chapter 4, the pharmacist participants failed to recognise that non-pharmacy staff are very familiar with the concept of 'pre-registration' students on wards.

The supervision of pre-registration pharmacists worked most effectively during the prototype placement at hospital 1 (chapter 6) and during the longitudinal placement at hospital 2 (chapter 7). In both instances, the ward pharmacists maintained overall oversight and accountability for the medicines-related work, the ward sister managed the day-to-day learning activities and involved the pre-registration pharmacist in the multi-disciplinary

meetings and the ward consultants assumed responsibility for teaching, questioning and involving trainees in decision-making. It appears that only the ward pharmacists can take responsibility for providing opportunities for legitimate peripheral participation during ward placements. This is due to pre-registration pharmacists needing to learn the skills and knowledge necessary for their future practice from registered pharmacists. This highlights that a multi-disciplinary approach, which includes the ward sister, pharmacist and consultant, reflects the best model for supervision and training

Chief pharmacists and pre-registration managers struggled to identify activities that pre-registration pharmacists could undertake during a ward placement (chapter 4). Instead, their concerns ranged from trainees having no activities to do, to being asked carry out personal care for patients, to having too much responsibility. Whereas the newly qualified pharmacists, nurses, doctors and ward pharmacist had a plethora of suggested activities for pre-registration pharmacists to undertake. These were fully realised during stakeholder discussions in chapter 5.

These barriers and others were not observed when the longitudinal placement was implemented. Nonetheless, these concerns about the redesign of hospital pre-registration training programmes to incorporate patient-facing activities, represents a challenge for changing hospital pre-registration training.

The barrier not addressed by the prototype or longitudinal placement was pharmacist accountability. The question of whether ward pharmacists are accountable for the mistakes a pre-registration pharmacist makes when the pharmacist is not present on the ward at the time of the mistake is yet to be resolved. Given the culture of fear that exists around giving pre-registration pharmacists autonomy, which may have its roots in the peppermint water case, pharmacist accountability in longitudinal placements will need to be established in the near future.

Possible enablers for introducing a ward placement into the hospital pre-registration year included: the placement wards being supportive

learning environments and the opportunity for trainees to become part of the team. The prototype and longitudinal placements identified that the 'right wards' at both hospitals had been selected to host the placement (chapter 6 and 7). This was due to each ward having an already existing positive learning culture and a stable ward team. Each of the pre-registration pharmacists became a member of the ward team during their longitudinal placement, which led to further learning opportunities and unexpectedly, benefits for the ward team and patients. Thus, the enablers predicted for introducing a ward placement into the pre-registration year were accurate.

However, chief pharmacists, pre-registration managers and diploma tutors did not identify becoming part of the ward team as an enabling feature of a ward placement. It is not clear why this was the case, but a possible explanation is that these pharmacists did not work as part of ward teams themselves, due to their senior positions within the pharmacy department. In addition, pre-registration pharmacist training sits outside of the hospital education infrastructure in most Trusts. Hence, pharmacists have no experience of undertaking joint learning and teaching sessions with healthcare professionals from other disciplines.

8.2.5 Ward placement development

Nursing staff at both hospitals were heavily involved in stakeholder discussions regarding the placement design (chapter 5). It is possible this gave the nurses a sense of ownership over the placement. Hence, when the placements were implemented, the nurses, particularly the ward sisters, invested heavily in supporting the trainees to develop.

There was little involvement from doctors during stakeholder discussions regarding the placement design and no doctors attended the advisory panel at either hospital (chapter 5). The absence of the doctors from the design discussions held repercussions when the longitudinal placement was implemented. In chapter 7, the consultants described how they were not fully aware of their responsibilities towards the pre-registration pharmacists. Similarly, the junior doctors were also unaware of the pre-registration pharmacists' training programme and were unsure of how to interact with the

trainees. This demonstrates the importance of involving doctors in the discussions regarding the placement design. In the future, creative ways to engage with doctors in the early stages of designing longitudinal placements will need to be developed.

During the stakeholder meetings and advisory panels, there were no discussions about the role, responsibilities and characteristics of the ward pharmacist in the longitudinal placement. It is possible that the lack of this discussion was a result of the researcher and stakeholder participants assuming the role of the ward pharmacist would not differ to the block rotational model of supervision. Consequently, when the longitudinal placement was implemented, the model of ward pharmacist supervision was distinctly different for each trainee. If the ward pharmacist was unable or unavailable to supervise the pre-registration pharmacist appropriately (as was the case for PRA and PRC respectively), it affected the ability of the pre-registration pharmacist to practise autonomously. Hence, the supervisory responsibilities of the ward pharmacist during the longitudinal placement appear to differ to rotational training. In longitudinal placements, the ward pharmacist has greater responsibility for ensuring pre-registration pharmacists undergo legitimate peripheral participation.

8.2.6 Longitudinal placement design

The longitudinal ward placement design reflected the qualities of a longitudinal placement, it:

- Provided opportunities for the pre-registration pharmacists to care for patients.
- Sought to encourage the pre-registration pharmacists to build good working relationships with the ward team.
- Aligned to the GPhC performance standards.
- Was 13-weeks in length.
- (Thistlethwaite *et al.*, 2013; Poncelet and Hirsh, 2016).

Studies exploring longitudinal placements as part of medical education identified many of the same benefits for medical students as the longitudinal placement for the pre-registration pharmacists did. These included:

- Assuming greater responsibility for patients as trust developed (Walters *et al.*, 2011).
- Improved confidence (Bell *et al.*, 2008; Zink *et al.*, 2008; Wamsley *et al.*, 2009; O'Donoghue, McGrath and Cullen, 2015).
- Feeling 'useful' (Walters *et al.*, 2011; O'Donoghue, McGrath and Cullen, 2015).

This demonstrates these benefits are not synonymous only with medical students. Therefore, the longitudinal placement model may hold benefits for other professions as well.

8.2.7 Longitudinal placement implementation

The longitudinal placement was implemented in the middle of the hospital pre-registration year. It is likely that the timing of the placement had considerable bearing on the outcomes observed. The pre-registration pharmacists had completed their degree and had worked in their respective hospitals for a number of months before the placement began.

It was clear that the pre-registration pharmacists needed sufficient time to embed themselves into the culture and practices of the pharmacy department prior to commencing their longitudinal placement. The trainees needed the skills and knowledge of the pharmacy operating systems. They also needed good working relationships with members of the pharmacy team to be able to undertake their role on the ward effectively. Therefore, if longitudinal ward placements are to be implemented by other hospitals in the future, pre-registration pharmacists must have the opportunity to embed themselves into the pharmacy team before commencing a longitudinal placement.

The hospital wards hosting the longitudinal placement displayed the characteristics indicative of a community of practice. There was evidence that the nurses and doctors had a joint enterprise, shared repertoire and

mutual engagement with one another. All the pre-registration pharmacists became members of the ward community of practice, which improved their access to learning and developmental opportunities. The positive learning culture, support of the ward sisters, board rounds, consultant ward rounds, length of time the trainees spent on the ward, their willingness become part of the team, the staff members understanding the trainee's role and the placement's design, all supported the pre-registration pharmacists to cross the boundary into the ward community of practice and transition from the periphery to the centre of membership.

The trainees continued membership within the pharmacy team and their transition into the ward community of practice, enabled them to practice across their landscape of practice; the pharmacy team and the ward community of practice.

Practising across their landscape of practice gave the pre-registration pharmacists access to more learning opportunities. The trainees learnt from their experiences and were able to apply their learning more readily during the longitudinal placement. The ability of the longitudinal placement to facilitate learning across the landscape is important, given that an estimated 80% of practitioners' knowledge is acquired from learning in the workplace (Yardley, Teunissen and Dornan, 2012; Dornan *et al.*, 2019).

8.2.8 Identity

The creation of an identity within a community of practice is an indicator of the extent to which a person can be considered a full member. The pre-registration pharmacists demonstrated that they engaged with the practice of the ward (engagement) and were able to understand what their role was on the ward (imagination). However, the ability of pre-registration pharmacists to influence (alignment) the practice of the ward staff was variable. The pre-registration pharmacists appeared to be able to influence the practice of the junior members of the ward team, but not the senior. Due to their limited practice experience and role as a 'pre-registration' pharmacist, their ability to influence the practice of registered healthcare professionals, particular those who are senior, appears limited. This may be appropriate,

given their status as an unregistered healthcare professional. Therefore, the creation of one's identity within a community of practice may only be fully realised upon acquiring professional registration and/or sufficient experience to be identified by others as competent and trustworthy.

This highlights the importance of the ward pharmacist during the longitudinal placement. As a registered healthcare professional, they may have more power to influence change (alignment) within the ward community of practice. However, pharmacists cannot begin to influence change within ward communities of practice if they are not seeking to acquire membership in the first instance. It appears that not all pharmacists are engaging with ward communities of practice; the most common form of communication between doctors and the ward pharmacist was via the green pen (chapter 4). The pre-registration pharmacists recounted how, often, nurses and doctors would not even know the name of the ward pharmacist (chapter 7). It would appear that pharmacists are not generally considered members of the ward community of practice and are not seeking membership. This could be due to the many responsibilities hospital pharmacists have. In chapter 7, a newly registered pharmacist had to cover two to three wards each morning, a 1-hour checking slot in pharmacy and covered patient discharges for up to four wards each afternoon. Therefore, the pharmacist's peripheral ward membership may have arisen out of necessity for the pharmacist to be able to work in all of these communities on any given day. If the ability of pharmacists to acquire membership within ward communities of practice is hampered by the working conditions of pharmacists in hospitals, then these practices need addressing. The Carter agenda will never be realised until issues surrounding pre-registration training and workforce development are solved.

Further possible evidence for pharmacists' non-membership in ward communities of practice can be found from the Francis report and the Gosport Independent Panel report (Francis, 2013; Gosport Independent Panel, 2018). In the Francis report, the omission of the pharmacists' presence and role on the ward may imply their non-membership in the ward community of practice. The Gosport Independent Panel reported the

pharmacists' role was as a supplier of medicines - rather than a member of the ward team who was involved in decisions about a patient's care. This infers that the ward pharmacist was not practising as a member of the ward community of practice. This lack of membership may hold consequences for patient care, particularly when medicines are involved. For this reason, it is vital that pre-registration training equips the future pharmacist workforce to be able to acquire membership in ward communities of practice. This is so that, upon registration, these pharmacists can engage, imagine and align across their landscape of practice to help prevent instances where medicines misuse is responsible for the harm or death of patients.

8.2.9 Placement viability

Unexpectedly, the pre-registration pharmacists enhanced the pharmacy service the longitudinal placement wards received. The trainees provided a more patient-centred proactive pharmacy service, which benefitted both staff and patients. Thus highlighting, how pharmacy support on hospital wards is not currently meeting the demands of the staff or the needs of patients. The 2-hour visit to the ward by the pharmacist to fulfil the medicines supply requests is not appropriate and pharmacists must undertake more patient-facing roles. The longitudinal placements have demonstrated the value-added to the pre-registration pharmacists, ward team and patients from the consistent presence of a member of the pharmacy team. The viability of the longitudinal placement is linked to the pre-registration pharmacists becoming part of the ward team, enabling them to better contribute to providing a safer and more efficient pharmacy service to the ward.

It must also be acknowledged that the placement's viability may be due to the way it was designed and who it was implemented by. The extensive stakeholder involvement in the design helped create a placement that was more likely to succeed in the ward settings it was developed for. There was also a long lead-in time between designing and implementing the longitudinal placement. Hence, if longitudinal placements are implemented in other settings that do not involve an extensive design process, the ability of the

placement to be viable in that setting may be affected. Therefore, other hospitals, which seek to introduce longitudinal ward placements as part of pre-registration pharmacist training will need to go through their own process of design and construction.

The viability of the longitudinal placement was also influenced by the willingness of the ward team to accept the trainees and their 'pro pharmacy' attitude. Communities of practice have the potential to be welcoming, supportive and accepting of trainees, as well as the potential to alienate, marginalise and frustrate trainees (Terry *et al.*, 2020). Hence, whilst the wards hosting the longitudinal placement in this study were accepting of the pre-registration pharmacists, other ward settings may not be so welcoming.

8.2.10 COVID-19

During March 2020, the COVID-19 pandemic caused the UK to go into lockdown and the GPhC announced that the June and September 2020 registration assessments would be postponed and a form of provisional registration would be introduced (General Pharmaceutical Council, 2020c). In May 2020, the GPhC made it known the registration assessment would be held online, in late 2020 or early 2021. At the time of writing (July 2020), the actual date of the postponed assessment had not been announced (General Pharmaceutical Council, 2020b).

By comparison, many universities cancelled final-year medical student exams and these students were invited by the GMC in early April to apply for provisional registration and join the medical register to work as interim foundation doctors (FiY1) (General Medical Council, 2020). In a similar vein, the NMC announced in early April that final year nursing students could move into clinical practice and be placed on the NMC temporary register (May, 2020). This highlights the differences in approach to the education and training of doctors and nurses compared to pharmacists. The pharmacy degree involves little patient-facing experience in the first four years and therefore it would be unsafe to allow pharmacy graduates to practice as an interim pharmacist without the year of practical experience provided by pre-registration pharmacist training.

8.2.11 Reforms to initial education and training

In July 2020, the NHS People Plan announced that the pre-registration pharmacist training year would be replaced by a foundation year, in order to enhance trainee's clinical experience (NHS, 2020). This forms part of the GPhC's reforms to the initial education and training of pharmacists, following a consultation in 2019 with the profession (General Pharmaceutical Council, 2019a; Chief Pharmaceutical Officers and UK Pharmacy Regulators, 2020). It appears that trainees completing the new foundation programme, will qualify as both a pharmacist and prescriber at the end of this year. The foundation training will be implemented in phases, which will begin as early as July 2021 (Chief Pharmaceutical Officers and UK Pharmacy Regulators, 2020; Pharmacy Schools Council, 2020).

The Pharmacy Schools Council have expressed their support for developing a curriculum that will enhance the skills of pharmacists from their degree to their pre-registration/foundation training. The Council acknowledges that pharmacists are moving away from medicines-supply into roles that involve the management of complex patients. Therefore, pharmacists will need the relevant knowledge and skills to prepare them for this role, such as, scientific reasoning, communication and decision-making. However, the Pharmacy Schools Council makes it clear that they consider pharmacists to be 'Science-Based Therapeutic Practitioners' – there is no mention of pharmacists as healthcare professionals. This, along with the proposal to keep the 4+1 model, may indicate that the misconception that the scientist must come first and the professional second, permeates the educational leadership of the profession (Taylor and Harding, 2007; Chief Pharmaceutical Officers and UK Pharmacy Regulators, 2020; Pharmacy Schools Council, 2020).

8.3 Conclusion

The DBR approach underpinned this research, providing a structure to a series of iterative studies that involved the design, implementation and

evaluation of a longitudinal 13-week ward placement for hospital pre-registration pharmacists.

The comprehensive descriptions of learning theories in this research is distinctive in the field of pharmacy education research. The application of learning theories has provided an explanation for the findings generated in each study, enabling the interpretation of results to have wider applicability beyond this research.

This is the first study to have introduced longitudinal placements into pre-registration pharmacist training and indicates that this training model is feasible and viable for training future pharmacists.

In summary, this research has contributed the following knowledge:

Theoretical and methodological

- Situated learning – legitimate peripheral participation is best provided by a 'master' from the same profession as the 'apprentice'.
- Landscapes of practice – alignment as a part of developing a person's identity in a community may be inhibited if the person is an unregistered or trainee professional.
- Design-based research – design concerns are a useful additional stage in the design and construction phase.
- Longitudinal qualitative analysis – using abductive analysis to code the data, framework analysis to organise the data, and trajectory analysis to interpret the data in the context of a change over time, presents a strategy for analysing qualitative longitudinal data.

Hospital pharmacists

- Hospital pharmacists may not work as part of ward teams. Therefore, are not considered members of a ward community of practice. Their membership and working practices on wards appears peripheral.

Current hospital pre-registration pharmacist training

- Short block rotational models of pre-registration training:
    - Foster a culture of 'tourism' amongst trainees.

    - Do not provide sufficient time for trainees to acquire membership within teams.
- The pre-registration pharmacist registration assessment acts as a barrier to the adoption of ward placements.

Longitudinal placements

- Longitudinal placements in hospital pre-registration pharmacist training have similar outcomes to those observed in medical education. Namely, an improved learning experience for trainees, their development as healthcare professionals and the opportunity to make a positive contribution to patient care.
- The apparent success of longitudinal placements may be attributable to their ability to support trainee healthcare professionals to acquire membership within a team.

A full-time 13-week longitudinal ward placement presents a viable model for informing the future foundation pharmacist training.

8.4 Recommendations for longitudinal ward placements

The findings from this research indicate that further studies exploring longitudinal ward placements as an alternative to short block rotations as part of hospital pre-registration pharmacist training are warranted. A number of recommendations for how longitudinal ward placements could become a part of standard practice, therefore becoming institutionalised, have been identified.

The first 13-weeks of the pre-registration year

Pre-registration pharmacists will require a minimum of 13-weeks at the beginning of their pre-registration year based in the pharmacy team. This will enable them to build relationships with members of the pharmacy team, become familiar with the pharmacy culture and enable them to develop competence with respect to technical activities, such as dispensing. Therefore, the first quarter of the pre-registration year should:

- Make every effort to incorporate the pre-registration pharmacists into the pharmacy team.
- Support pre-registration pharmacists to complete all the necessary pharmacy logs/competencies.
- Be seeking to prepare pre-registration pharmacists for their longitudinal ward placement.
- Incorporate a ‘Medicines Information’ rotation, where possible.

Choosing a ward to host the longitudinal placement

In order to determine an appropriate ward to host a 13-week longitudinal placement for pre-registration pharmacists, the following considerations should be made regarding the ward team:

- There is a good learning culture already established.
- They are considered ‘pro pharmacy’ and have an already recognised positive relationship with the pharmacy team.
- The leadership team on the ward are prepared to champion the longitudinal placement to staff.
- The ward team are stable i.e. there is not a high staff turnover.
- The ward sister, consultant(s) and pharmacist are willing and enabled to support the pre-registration pharmacist.

The following considerations regarding the ward type should be made:

- Highly specialised wards should be avoided.
- Generalist wards are favoured (due to the generalist nature of the registration assessment).

Selecting the pharmacist

To allocate a suitable pharmacist(s) to the longitudinal placement, the following considerations should be made:

- Where possible, consistency of pharmacy supervision/support should be maintained.
- The pharmacist(s) should be sufficiently available to support the trainee, particularly at the start of the longitudinal placement.

- The pharmacist is properly briefed about the longitudinal placement and understands that their supervisory responsibilities will be different to the rotational model.

Ideally, pharmacist(s) should have:

- Sufficient experience to support a pre-registration pharmacist during a longitudinal ward placement.
- An interest in developing others.
- An already positive pre-existing relationship with the ward sister/consultant.

Designing the 13-week longitudinal ward placement

In order to develop and design the longitudinal placement, there will need to be at least one individual who is responsible for directing this process. This will most likely be the education and training lead/pre-registration manager or pre-registration tutor. So that the longitudinal ward placement can be developed for the relevant context, the following should be considered:

- Chief pharmacists/deputy chief pharmacists should be supportive of the longitudinal placement initiative and communicate their support to the wider pharmacy team and hospital wards participating.
- Every effort should be made to involve the ward sister and consultants/registrars in the design of the placement. The placement is more likely to be implemented successfully if these individuals are involved in the development of the placement.
- Discussions regarding the role of the trainee, the pharmacist, the sister and the consultant should be included as part of the discussion surrounding the placement design.
- The workbook used to communicate the placement design in this thesis (appendix 25) may be used as a blueprint and adapted for the relevant hospital/ward setting.
- Discussions surrounding the supervision and support of the pre-registration pharmacist by different individuals should take place.

- A non-pharmacy member of the ward team (e.g. ward sister) should be responsible for developing a 1-week induction programme for the pre-registration pharmacist. The purpose of the induction week is for the trainee to learn about the roles and responsibilities of non-pharmacy healthcare professionals based on the ward.
- The longitudinal placement should be a minimum of 13-weeks in length. This time may include up to 1-week of annual leave and time allocated for specific study sessions.

Pre-registration pharmacist

The main qualities and attributes that pre-registration pharmacists will need in order to make the most of the longitudinal placement include:

- Self-motivated to become part of the ward team.
- Willing to get ‘stuck in’.
- Friendly and approachable.
- Aware of the limitations of their role.
- Aware that learning occurs as a result of becoming part of the team.

Implementing the placement

When a longitudinal placement is due to be implemented, the following considerations should be made:

- Learning objectives for the pre-registration pharmacist should be defined.
- The pharmacist and pre-registration pharmacist should have an awareness of any workplace assessment tools that might be used as part of pre-registration training.
- Pharmacist support should be withdrawn gradually, in line with the pre-registration pharmacist’s development.

Evaluation

The pre-registration tutor should seek feedback from the pre-registration pharmacist, ward pharmacist and nursing/medical team throughout the

longitudinal placement. The use of 360° feedback may be used to facilitate this process.

8.5 Recommendations for future research

The findings from this research indicate a number of different avenues that should be explored in future research studies.

Design-based research

More research using the DBR approach should be undertaken in pharmacy and other healthcare disciplines such as medicine and nursing, to determine its value as an approach to researching educational interventions within healthcare.

Utilising the ‘framework method’ to identify the ‘design requirements’ and ‘design propositions’ warrants further investigation as useful method for designing an intervention.

The concept of ‘design concerns’ as a supplement to ‘design requirements’ and ‘design propositions’ to aid the design and construction of an intervention should also be investigated further.

Learning theory

Additional research into the application of learning theories, particularly communities of practice and landscapes of practice to pharmacy is needed. Specifically, research into whether hospital pharmacy departments and community pharmacies operate as communities of practice.

Further research into the concept of ‘alignment’ as part of identity building in a community of practice amongst trainee professionals is merited. This should seek to ascertain whether trainees are able to influence the community of practice they are placed within and if not, determine if this is as a result of their status as a ‘trainee’.

The process of legitimate peripheral participation of pre-registration pharmacists and pharmacy students during training and/or experiential placements warrants further investigation.

Longitudinal placements

Future research should seek to conduct beta testing on 13-week longitudinal ward placements at other hospitals. This research should focus on determining the local viability, tolerance and institutionalisation of the placement.

Following further iterations of beta testing the 13-week longitudinal ward placement, gamma testing may be carried out on a large enough sample, to determine the effectiveness and impact of the placement.

Research may then explore the feasibility of a pre-registration training model that involves up to four 13-week longitudinal placements. There is the possibility for these placements occurring in different sectors of practice to achieve holistic training.

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Appendices

Appendix 1 Ethical approval - chapters 4 and 5

Faculty of Medicine and Health Sciences Research Ethics Committee

Research & Enterprise Services
West Office (Science Building)
University of East Anglia
Norwich Research Park
Norwich, NR4 7TJ

Telephone: +44 (0) 1603 591490
Email: fmh.ethics@uea.ac.uk

Web: www.uea.ac.uk/researchandenterprise

Hannah Kinsey
PHA

8.5.17

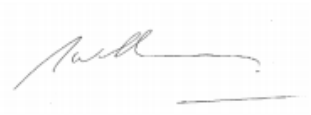
Dear Hannah,

Project Title: **Integrating pre-registration pharmacy students into ward teams for extended placements: Developing the model and evaluating the impact**
Reference: 2016/17 - 66

The submission of your above proposal has been considered by the Faculty Research Ethics Committee and we can confirm that your proposal has been approved.

Please could you ensure that any further amendments to either the protocol or documents submitted are notified to us in advance and also that any adverse events which occur during your project are reported to the Committee. Please could you also arrange to send us a report once your project is completed.

Yours sincerely,



Mark Wilkinson
Chair FMH Research Ethics Committee

Faculty of Medicine and Health Sciences Research Ethics Committee

Research & Enterprise Services
West Office (Science Building)
University of East Anglia
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Telephone: +44 (0) 1603 591490
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Web: www.uea.ac.uk/researchandenterprise

Hannah Kinsey
PHA

15th June 2017

Dear Hannah,

Project Title: **Integrating pre-registration pharmacy students into ward teams for extended placements: Developing the model and evaluating the impact**
Reference: 2016/2017 - 66

Thank you for your e-mail dated 12.06.17 notifying us of the amendments you would like to make to your above proposal. These have been considered and we can now confirm that your amendments have been approved.

Please can you ensure that any further amendments to either the protocol or documents submitted are notified to us in advance, and also that any adverse events which occur during your project are reported to the Committee.

Please can you also arrange to send us a report once your project is completed.

Yours sincerely,

Mark Wilkinson
Chair FMH Research Ethics Committee

CC David Wright
REN Project Officer Samuel Hills (R203916)

Appendix 2 Health Research Authority Approval - chapters 4 and 5

NHS
Health Research Authority

Miss Hannah Kinsey
PhD Student
University of East Anglia
School of Pharmacy
University of East Anglia
Norwich Research Park
NR4 7TJ

Email: hra.approval@nhs.net

08 August 2017

Dear Miss Kinsey,

Letter of HRA Approval

Study title:	**Integrating pre-registration pharmacists into ward teams for extended placements: Developing the model and evaluating the impact**
IRAS project ID:	**229457**
Sponsor	**University of East Anglia**

I am pleased to confirm that HRA Approval has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications noted in this letter.

Participation of NHS Organisations in England

The sponsor should now provide a copy of this letter to all participating NHS organisations in England.

Appendix B provides important information for sponsors and participating NHS organisations in England for arranging and confirming capacity and capability. **Please read *Appendix B* carefully**, in particular the following sections:

- *Participating NHS organisations in England* – this clarifies the types of participating organisations in the study and whether or not all organisations will be undertaking the same activities
- *Confirmation of capacity and capability* - this confirms whether or not each type of participating NHS organisation in England is expected to give formal confirmation of capacity and capability. Where formal confirmation is not expected, the section also provides details on the time limit given to participating organisations to opt out of the study, or request additional time, before their participation is assumed.
- *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* - this provides detail on the form of agreement to be used in the study to confirm capacity and capability, where applicable.

Further information on funding, HR processes, and compliance with HRA criteria and standards is also provided.

It is critical that you involve both the research management function (e.g. R&D office) supporting each organisation and the local research team (where there is one) in setting up your study. Contact details and further information about working with the research management function for each organisation can be accessed from www.hra.nhs.uk/hra-approval.

Appendices

The HRA Approval letter contains the following appendices:

- A – List of documents reviewed during HRA assessment
- B – Summary of HRA assessment

After HRA Approval

The attached document *"After HRA Approval – guidance for sponsors and investigators"* gives detailed guidance on reporting expectations for studies with HRA Approval, including:

- Working with organisations hosting the research
- Registration of Research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics and is updated in the light of changes in reporting expectations or procedures.

Scope

HRA Approval provides an approval for research involving patients or staff in NHS organisations in England.

If your study involves NHS organisations in other countries in the UK, please contact the relevant national coordinating functions for support and advice. Further information can be found at http://www.hra.nhs.uk/resources/applying-for-reviews/nhs-hsc-rd-review/.

If there are participating non-NHS organisations, local agreement should be obtained in accordance with the procedures of the local participating non-NHS organisation.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/.

HRA Training

We are pleased to welcome researchers and research management staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

IRAS project ID	229457

Your IRAS project ID is **229457**. Please quote this on all correspondence.

Yours sincerely

Miss Lauren Allen
Assessor

Email: hra.approval@nhs.net

Copy to: *Professor David Wright (Sponsor contact)*
[redacted]

IRAS project ID	229457

Appendix A - List of Documents

The final document set assessed and approved by HRA Approval is listed below.

Document	*Version*	*Date*
Contract/Study Agreement template [Hannah Kinsey PhD Contract Agreement]	1	06 July 2016
Covering letter on headed paper [Covering Letter]	1	19 July 2017
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Sponsor Indemnity]	1	12 July 2017
HRA Schedule of Events	1.0	20 July 2017
HRA Statement of Activities	1.0	20 July 2017
Interview schedules or topic guides for participants [Phase 1 Topic Guide]	1	24 July 2017
Interview schedules or topic guides for participants [Phase 2 Topic Guide]	1	24 July 2017
Interview schedules or topic guides for participants [Phase 3 Topic Guide]	1	24 July 2017
IRAS Application Form [IRAS_Form_19072017]		19 July 2017
Letter from sponsor [Letter from sponsor]	1	12 July 2017
Letters of invitation to participant [Phase 1 Email of Invitation]	1	24 July 2017
Letters of invitation to participant [Phase 2 Email of Invitation]	1	24 July 2017
Letters of invitation to participant [Phase 3 (Method 1) Email of Invitation]	1	24 July 2017
Letters of invitation to participant [Phase 3 (Method 2) Invitation Email]	1	24 July 2017
Letters of invitation to participant [Phase 3 (Method 3) Invitation Email]	1	24 July 2017
Other [UEA Ethics Approval]	1	15 June 2017
Other [Ethical Approval]	1	07 August 2017
Participant consent form [Phase 2 Consent Form]	2	24 July 2017
Participant consent form [Phase 3 Consent Form]	2	24 July 2017
Participant consent form [Phase 1 Consent Form]	2	24 July 2017
Participant information sheet (PIS) [Phase 1 Participant Information Sheet]	1	24 July 2017
Participant information sheet (PIS) [Phase 2 Participant Information Sheet]	1	24 July 2017
Participant information sheet (PIS) [Phase 3 Participant Information Sheet]	1	24 July 2017
Research protocol or project proposal [Research Protocol]	4	24 July 2017
Summary CV for Chief Investigator (CI) [Hannah Kinsey CV]	4	27 May 2017
Summary CV for student [Hannah Kinsey CV]	4	27 May 2017
Summary CV for supervisor (student research) [Jeremy Sokhi]	1	24 May 2017
Summary CV for supervisor (student research) [Maria Christou CV]	1	31 May 2017
Summary CV for supervisor (student research) [David Wright CV]	1	23 May 2017
Summary, synopsis or diagram (flowchart) of protocol in non technical language [Flow Diagram]	1	13 June 2017

IRAS project ID	229457

Appendix B - Summary of HRA Assessment

This appendix provides assurance to you, the sponsor and the NHS in England that the study, as reviewed for HRA Approval, is compliant with relevant standards. It also provides information and clarification, where appropriate, to participating NHS organisations in England to assist in assessing and arranging capacity and capability.

For information on how the sponsor should be working with participating NHS organisations in England, please refer to the, *participating NHS organisations, capacity and capability* and *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* sections in this appendix.

The following person is the sponsor contact for the purpose of addressing participating organisation questions relating to the study:

Name: Professor David Wright
Tel: 01603592042
Email: d.j.wright@uea.ac.uk

HRA assessment criteria

Section	HRA Assessment Criteria	Compliant with Standards?	Comments
1.1	IRAS application completed correctly	Yes	No comments
2.1	Participant information/consent documents and consent process	Yes	Document version numbers and dates need were added to the invitation letters, information sheets, consent forms and interview topic guides.
3.1	Protocol assessment	Yes	No comments
4.1	Allocation of responsibilities and rights are agreed and documented	Yes	The Statement of Activities and Schedule of Events will act as the agreement between the sponsor and sites.
4.2	Insurance/indemnity arrangements assessed	Yes	Where applicable, independent contractors (e.g. General Practitioners) should ensure that the professional indemnity provided by their medical

Section	HRA Assessment Criteria	Compliant with Standards?	Comments
			defence organisation covers the activities expected of them for this research study
4.3	Financial arrangements assessed	Yes	No funding will be provided to sites.
5.1	Compliance with the Data Protection Act and data security issues assessed	Yes	The applicant has confirmed arrangements for transferring data securely.
5.2	CTIMPS – Arrangements for compliance with the Clinical Trials Regulations assessed	Not Applicable	No comments
5.3	Compliance with any applicable laws or regulations	Yes	No comments
6.1	NHS Research Ethics Committee favourable opinion received for applicable studies	Not Applicable	No comments
6.2	CTIMPS – Clinical Trials Authorisation (CTA) letter received	Not Applicable	No comments
6.3	Devices – MHRA notice of no objection received	Not Applicable	No comments
6.4	Other regulatory approvals and authorisations received	Not Applicable	No comments

Participating NHS Organisations in England

This provides detail on the types of participating NHS organisations in the study and a statement as to whether the activities at all organisations are the same or different.

There is one site type. Gatekeepers have been identified at the sites to identify participants and send study information on behalf of the research team. Focus groups and advisory panel meetings with NHS staff may be conducted at the site or at non-NHS conference rooms.

Phase 2 of the research will involve interviewing individuals at Higher Education Institutes and will not include NHS staff or sites. HRA Approval does not cover activity outside the NHS. Before recruiting outside the NHS, the research team must follow the procedures and governance arrangements of responsible organisations.

The Chief Investigator or sponsor should share relevant study documents with participating NHS organisations in England in order to put arrangements in place to deliver the study. The documents should be sent to both the local study team, where applicable, and the office providing the research management function at the participating organisation. For NIHR CRN Portfolio studies, the Local LCRN contact should also be copied into this correspondence. For further guidance on working with participating NHS organisations please see the HRA website.

If Chief Investigators, sponsors or Principal Investigators are asked to complete site level forms for participating NHS organisations in England which are not provided in IRAS or on the HRA website, the Chief Investigator, sponsor or Principal Investigator should notify the HRA immediately at hra.approval@nhs.net. The HRA will work with these organisations to achieve a consistent approach to information provision.

Confirmation of Capacity and Capability

This describes whether formal confirmation of capacity and capability is expected from participating NHS organisations in England.

Participating NHS organisations in England **will be expected to formally confirm their capacity and capability** to host this research.

- The sponsor should ensure that participating NHS organisations are provided with a copy of this letter and all relevant study documentation, and work jointly with NHS organisations to arrange capacity and capability whilst the HRA assessment is ongoing.
- Further detail on how capacity and capability will be confirmed by participating NHS organisations, following issue of the Letter of HRA Approval, is provided in the *Participating NHS Organisations* and *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* sections of this appendix.

The Assessing, Arranging, and Confirming document on the HRA website provides further information for the sponsor and NHS organisations on assessing, arranging and confirming capacity and capability.

IRAS project ID	229457

Principal Investigator Suitability

This confirms whether the sponsor position on whether a PI, LC or neither should be in place is correct for each type of participating NHS organisation in England and the minimum expectations for education, training and experience that PIs should meet (where applicable).
A key contact has been identified at each of the sites to identify participants and send study information on behalf of the research team. GCP training is not a generic training expectation, in line with the HRA statement on training expectations.

HR Good Practice Resource Pack Expectations

This confirms the HR Good Practice Resource Pack expectations for the study and the pre-engagement checks that should and should not be undertaken
External staff will only be expected to obtain a Letter of Access to conduct study activity at the sites, if the activity is being undertaken in clinical areas of the sites. Disclosure and Barring Service and Occupational Health checks should be confirmed where a Letter of Access is in place.

Other Information to Aid Study Set-up

This details any other information that may be helpful to sponsors and participating NHS organisations in England to aid study set-up.
• The applicant has indicated that they do not intend to apply for inclusion on the NIHR CRN Portfolio.

Appendix 3 Participant information sheet - chapter 4 focus groups

Integrating pre-registration pharmacists into ward teams for extended placements

Principal Investigator: Hannah Kinsey

School of Pharmacy, University of East Anglia

01603 591973

h.kinsey@uea.ac.uk

This information sheet is provided to help you understand this project and what it will involve. It is set out as a series of questions and answers. If the question that you would like to ask is not provided then please feel free to contact Hannah Kinsey via telephone or email.

What is the project about?

The aim of this project is to design a ward-based placement for incorporation into the pharmacy pre-registration year at [redacted].

Why have I been chosen?

You have been invited to take part in this research because we value your opinion with respect to the design of a ward-based placement for pre-registration pharmacists.

What does the project involve?

The project will involve a 1 – 1 ½ hour focus group with the principal investigator, where aspects relating to the design of a ward-based placement for inclusion into the pharmacist pre-registration training year will be discussed amongst participants.

What are the benefits of becoming involved in this project?

The results of this project will be used to influence the content and design of a novel pre-registration pharmacist training programme at [redacted]. Additionally, the preliminary findings from this project will be shared with you.

Will I be able to be identified from this focus group?

No, your identity will be anonymised in the transcript of the focus group and in any publications or presentations based on this research project.

How will my information be stored?

The electronic anonymised transcript will stored on a password protected computer. Anonymised paperwork relating to this study will be stored in a location which can only be accessed by the research team. Long-term data for this research will be stored in a secure room on a password protected computer at the University of East Anglia (UEA) for 10 years. All procedures for the handling, processing, storage and destruction of data are compliant with the Data Protection Act 1998.

What if I reveal sensitive information during the focus group?

Due to the nature of the topic for discussion, it is unlikely that sensitive information will be revealed, however, all participants will be asked to refrain from mentioning sensitive information e.g. relating to patients, themselves, family members or colleagues. If sensitive information is revealed, the research team will later discuss if any further action needs to be taken.

Will I be compensated for taking part?

No, however refreshments will be provided.

Travel Expenses

If you have had to travel specifically for the focus group, travel expenses can be reimbursed – please contact Hannah Kinsey regarding this prior to attendance at the focus group.

What if I decide during the focus group I do not want to continue?

You can withdraw your consent at any point before and during the focus group, but please bear in mind that anything you have said in the focus group up until the point of withdrawal cannot be withdrawn.

What if I choose not to participate?

Participation is entirely voluntary. If you would prefer to receive no further contact from the research team regarding this research, please email h.kinsey@uea.ac.uk and state that you do not wish to be contacted further regarding this research.

What happens next if I would like to participate?

If you would like to take part in the focus group, please complete the 'Expression of Interest' document attached to this email and email it to h.kinsey@uea.ac.uk.

Complaints

If you have a complaint about how you were approached or how the focus groups were conducted please contact Professor Mark Searcey (Head of the School of Pharmacy) at the University of East Anglia at m.searcey@uea.ac.uk. He will be able to answer any concerns which you may have.

Appendix 4 Participant information sheet - chapter 4 interviews

NHS East of England

University of East Anglia

The design of a ward-based placement for incorporation into the hospital pharmacy pre-registration training year

Principal Investigator: Hannah Kinsey

School of Pharmacy, University of East Anglia

01603 591973

h.kinsey@uea.ac.uk

This information sheet is provided to help you understand this project and what it will involve. It is set out as a series of questions and answers. If the question that you would like to ask is not provided then please feel free to contact Hannah Kinsey via telephone or email.

What is the project about?

The aim of this project is to design a ward-based placement for incorporation into the pharmacy pre-registration year at [redacted]

Why have I been chosen?

You have been invited to take part in this research because we value your thoughts and experiences from your involvement with clinical placements for healthcare students/professionals.

What does the project involve?

The project will involve a face-to-face interview with the principal investigator, expected to last up to 1 hour.

What are the benefits of becoming involved in this project?

The results of this project will be used to influence the content and design of a novel pre-registration training programme at [redacted]. Additionally, the preliminary findings from this project will be shared with you.

Will I be able to be identified from this interview?

No, your identity will be anonymised in the transcript and in any publications or presentations based on this research project.

What if I reveal sensitive information during the interview?

Due to the nature of the topic for discussion, it is unlikely that sensitive information will be revealed, however, all participants will be asked to refrain from mentioning sensitive information e.g. relating to patients, themselves, family members or colleagues. If sensitive information is revealed, the research team will later discuss if any further action needs to be taken.

How will my data be stored?

The electronic anonymised transcript will stored on a password protected computer. Anonymised paperwork relating to this study will be stored securely where only the research team have access to. Long-term data for this research will be stored in a secure room on a password protected computer at the University of East Anglia (UEA) for 10 years. All procedures for the handling, processing, storage and destruction of data are compliant with the Data Protection Act 1998.

What if I decide during the interview I do not want to continue?

You can withdraw your consent before and during the interview.

Will I be compensated for taking part?

No.

Travel Expenses

If you have had to travel specifically for the interview, travel expenses can be reimbursed – please contact Hannah Kinsey regarding this.

What if I choose not to participate?

Participation is entirely voluntary. If you would prefer to receive no further contact from the research team regarding this research, please email h.kinsey@uea.ac.uk and state that you do not wish to be contacted further regarding this research.

What happens next if I would like to participate?

If you would like to be interviewed, email h.kinsey@uea.ac.uk, stating that you would like to participate in an interview. From there, a suitable date, time and venue will be arranged.

Complaints

If you have a complaint about how you were approached or how the interview was conducted please contact Professor Mark Searcey (Head of the School of Pharmacy) at the University of East Anglia at m.searcey@uea.ac.uk. He will be able to answer any concerns you may have.

Appendix 5 Focus group topic guide – chapter 4

Prior to Focus Group Starting	• Introduce self; name and role and introduce assistant moderator; name and role • Please note that any work you may have missed as a result of you being here, you will need to catch up on. • We are looking to do a piece of research based on the hospital pre-registration year. Specifically we are hoping to design a novel hospital pre-registration training programme which will incorporate a ward-based placement as part of the training. • Following the design of the pre-registration programme we are hoping to test the design at two hospitals in the [redacted] • Each of you have been asked to take part in this focus group because we as a research team value your opinions with respect to the design of the pre-registration programme. • Today we are looking to discuss with you some of your thoughts and ideas regarding the design of the ward-based placement. • We would like to record the session so that we can focus on what you're saying without the need to make a lot of notes, though I may make a few notes if I need to. • For the purposes of the recording and the fluidity of the group, please try not to talk over somebody and please refrain from talking about specific patients, or aspects of your working life which may not be appropriate in this setting. • It's important to remember when answering and discussing questions that there are no right or wrong answers, just be yourself and speak as honestly as possible. I would encourage you to discuss the topics amongst yourselves, challenging and talking to one another. I will be here to guide and facilitate the conversation, but I would encourage you to interact with one another. • Anything that is said within the session will be treated confidentially, your responses will be stored in an anonymous format, and so your names will not appear in any report. • We also ask that each of you treat what is said within this session with the same confidentiality, and don't share other people's responses. Though, of course, you are free to share your own experience. • The session should take no more than one hour • Are there any questions before we begin?	Organise paperwork (consent forms and information sheets) Two Dictaphones Spare batteries Notebook Paper and pens for participants Organise refreshments

	• Finally, please relax and enjoy the experience of the focus group – I value each of your thoughts and opinions and this is an environment where you can express your views.	
Switch on the recording device	• Confirm current status of each participant ○ Can you please confirm your name for the recording? • Icebreaker question: Just in a few sentences, would each of you be able to tell me your thoughts on the current pre-registration training model?	

Main Questions	**Potential Probes**	**Notes**
Tell us about your initial thoughts on a ward-based placement as part of the pre-registration year.	What barriers do you perceive that we need to overcome in order to make this placement a reality? What enablers exist that will help us to make this placement a reality?	Resources Staff Time
Tell me about some of the activities the pre-reg pharmacist could undertake on the ward without the need for further training?	What activities can they undertake independently?	Medicines management activities
Assuming that appropriate training would be provided as and when necessary, what additional activities could the pre-reg undertake on the ward with support/guidance?	What would the support they receive look like?	Nursing activities
Tell me about some of the activities the pre-reg pharmacist shouldn't undertake on the ward?	Why wouldn't it be appropriate for the pre-reg to undertake these activities?	
Having thought about what activities are feasible for the pre-reg to undertake, what kind of ward could the placement happen on?	How much pharmacist involvement should that ward have?	Inclusion criteria Exclusion criteria
How should the pre-reg be supervised when on their placement? Who should supervise the pre-reg when on their placement?	What would be the role of the pre-registration tutor? What would be the role of the ward pharmacist? Would any training be required for the supervisory team? Involvement of the ward team in supervision?	Indemnity/accountability for student whilst on the ward

What could the pre-reg have achieved at the end of their ward-based placement?	What skills could they have developed? What knowledge could they have gained? Performance standards achieved? Can you each think of one thing that the pre-reg could have achieved at the end of their placement?	
Tell me about how the ward-based placement would fit into the context of the rest of the pre-reg year?	When in the year would the pre-reg year take place? How long will the ward-based placement last for? How is the ward-based placement going to affect the remainder of the pre-registration year?	Number of students at each hospital? Working hours during their placement?

Closing statements	**Potential probes**	**Notes**
Please take a moment to reflect on the discussions and identify what the most important topic talked about was to you.	Is there anything you feel we should have talked about and haven't? Thank you for your time, the findings will be shared with you once the report has been completed	

Probing Prompts

Who else agrees?

What's your point of view?

Tell me a bit more about that

Can you give me an example?

Help me understand why that's an issue

Can anyone suggest a way in which these could be overcome?

Can you tell me a bit more about what you mean?

Appendix 6 Interview topic guide - chapter 4

Prior to Interview Starting	• Introduce self • Please note that any work you may have missed as a result of you being here, you will need to catch up on. • We are looking to do a piece of research based on the hospital pre-registration year. Specifically we are hoping to design a novel hospital pre-registration training programme which will incorporate a ward-based placement as part of the training. • Following the design of the pre-registration programme we are hoping to test the design at two hospitals in the [redacted] • You have been asked to take part in this interview because we as a research team value your opinions and experience with respect to facilitating clinical placements for healthcare professionals/students. • Today we are looking to discuss with you some of your thoughts and ideas regarding the design of the ward-based placement. • I would like to record the session so that I can focus on what you're saying without the need to make a lot of notes, though I may make a few notes if I need to. • It's important to remember when answering and discussing questions that there are no right or wrong answers, please just be yourself and speak as honestly as possible. • Please refrain from talking about specific patients, or aspects of your working life which may not be appropriate in this setting. • Anything that is said within the session will be treated confidentially, your responses will be stored in an anonymous format, and so your name will not appear in any report. • The session should take no more than one hour • Are there any questions before we begin? • Finally, please relax and enjoy the experience of the interview – I value your thoughts and opinions and this is an environment where you can express your views.	Organise paperwork (consent form and information sheet) Two Dictaphones Spare batteries Notebook Paper and pens Organise refreshments
Switch on the recording device	○ Can you please confirm your name for the recording? • Icebreaker question: Just in a few sentences, would each of you be able to tell me why it is you volunteered to participate in the interview today?	

	• Does the research topic interest you?	

Main Questions	Potential Probes	Notes
Could you describe your current role with respect to the clinical placements?	Do you organise and facilitate placements? Do you manage students whilst on placement?	
Tell me about how you prepare students for their placements	Do they have preparatory work to undertake beforehand? Do they need to attend courses e.g. first-aid?	
Tell me about how students are supported during their placement	Do they have a mentor? Does the mentor receive training from the University? Do they still remain in contact with the University?	Details regarding model of supervision
Tell me about how you determine the level of autonomy students can have during their placement	Do you assess them prior to their placement? Are they assessed during their placement?	How are they assessed?
Please could you describe how the activities the student undertakes are structured and organised?	Do they begin with simpler tasks and move onto more complex ones?	How do they determine level of task.
Tell me about the skills you would like the students to have developed during their placement	Team-working skills? Communication skills?	
What are your thoughts on a ward-based placement as part of the pharmacy pre-registration idea?	Perceived barriers? Perceived facilitators?	
What advice can you give us about running clinical placements?		

Closing statements	Potential probes	Notes
Please take a moment to reflect on the discussions and identify what the most important topic talked about was to you.	Is there anything you feel we should have talked about and haven't?	

	Thank you for your time, the findings will be shared with you once the report has been completed	

Appendix 7 Placement requirements - chapter 5

NB: * indicates opposing opinions.

Requirement subclass	Requirement	Who said so?							
Placement length	Half a day shadowing specialists	PM5							
	1-2 weeks	CP1	CP4						
	2 weeks maximum (after the exam)	PM1							
	1 month	CP3							
	1 - 2 months	NQ4	CP2	DR5					
	2-3 months	DT3	DR5						
	3 months	NS2	NS3	DR3					
	4 months maximum	PM2							

	4-6 months	NQ1							
	6 months*	NQ3	WP1	NS1					
	Not 6 months*	CP4	CP1						
	Enough time to meet other competencies a pre-reg needs to do in their year	DT1							
	Two at the same time, could alternate	WP1							
Timing of placement	Beginning of pre-reg	NQ12							
	Middle of pre-reg	NQ3	PM2	PM4					
	Near end of pre-reg	NQ4							
	Induction period first	PM4							
	Pre-Reg needs to have grounding in pharmacy activities before ward based*	PM1	PM5	CP4	CP3				
	Pre-Reg to go to the ward before pharmacy*	DT1							

Ward type	Older Persons Medicine	NQ1	NQ14	NQ3	NS2	NS3	WP1	NS1	DR3
	Surgical as simpler*	NQ2							
	AMU/EAU**	NQ13	DT2	DT3	DT2	Dr5			
	Cardiology as learnt a lot about cardiac medicines	NQ4							
	Medical over surgical	DT1							
	Not surgical as only doing TTOs and not learning*	NQ1	NQ5	DT1					
	Not AMU**	NQ3							
	Not a specialist ward	NQ11	NQ17						
GPhC requirements	Which GPhC competencies do pre-reg's have difficulty obtaining now? E.g. patient experience and confrontational situations	CP2	CP4	CP3	CP1				

	Ward staff should know what performance standards the pre-reg is expected to meet	DT3	DT1	DT2					
	Pre-Reg must meet all competencies in their pre-reg year	DT1							
	Activities must be mapped to the GPhC performance standards	CP3	DT3	DT2					
Selection process	Careful selection required	PM2	PM5						
	Selection of pre-reg's for placement should be random*	PF3							
	Researchers/hospital to select the appropriate candidates for placement*	CP2							
	Pre-Reg to sit a test prior to doing placement	NQ5							
Supervision criteria	Nurses clear about their responsibilities when supervising; need for training nurses	CP3							
	Supervisor on the wards understand about the performance standards	DT3							

	Pre-reg should not be unsupervised	PM5							
	Someone from pharmacy available on the ward the whole time pre-reg was there	NQ5	PM1	PM2	PM4	CP1	CP4		
	Should be someone closer to the pre-reg in qualification time	NQ11	NQ15	NQ16	NQ13				
	Should come from a specialist pharmacist (better learning opportunities)	NQ16	NQ17	NQ18					
	Should come from an educational person	NQ15							
	Should be clear who is responsible for supervising	PF1	PF4						
	Supervision should be robust and include providing feedback	DR5							
Support	Working hours need to be the same as pharmacists; Monday - Friday 9am-5pm	WP1	NS1						
	Support network needs to be well structured	DT3							

	Near peer support for pre-reg to be explored	DT3							
	Pre-Reg needs to feel supported	DT3							
	Pre-reg needs to be supported by more than just pharmacy	DR2							
	Pharmacist available on the end of a bleep to help pre-reg	NQ4	NQ2						
General guidance	Avoid having multiple student types on the ward at the same time	PF3	NS1						
	Desire an immersive ward based experience with consistency	CP2							
	Determine who is accountable (when pre-reg makes mistake)	NQ12							
	Be ready to pull the plug on the placement if it isn't working	CP2							
	Consider liability and memorandums of understanding for each hospital	PF4							

	Consider utilising learning contracts for the pre-reg pharmacists	PF1							
	Defined objectives are outlined for the placement	CP1	CP2	CP3	PF4	DT3	DT2	DT1	WP1
	Good training needed for the placement to be successful	NQ1	DR5						
	Clear guidance in place	CP3	WP1						
	Ensure the pre-reg's gain clinical and not just administrative experience	DR5							
Clear role	Patients need to be aware the pre-reg is a student	PF1							
	Pre-Reg needs to make it clear to staff that they are a trainee	NQ15							
	The role of the pre-reg needs to be clearly defined	DT3							

	Pre-reg needs to know where their boundaries are	WP1							
	Pre-Reg needs to have different uniform so they can be recognised as a trainee	NQ12							
Advice giving	Pre-Reg should not give advice to staff	PM3							
	Pre-Reg cannot give pharmaceutical advice in absence of pharmacist	NQ17	NQ12	NQ14					
	Ward staff need to know legally that pre-reg cannot give advice	PM5							
	Any advice given to a healthcare professional must be vetted by a pharmacist	PM4							
	Pre-Reg needs to be aware of their limitations when giving advice	DT3							
Assessment of pre-reg	Competency assessments to take place prior to independent working	PF1	PF3						

	Must be completed by a pharmacist to meet the GPhC requirement	DT1							
	Assessment will depend on objectives for the placement and how long the placement is and who is responsible for assessment	PF4							
	Close monitoring of the progress of the pre-reg to make sure they're producing adequate documentary evidence	CP2	CP4						
	Mini-PAT	NQ4							
Team need to be happy	Trust management to approve programme	NQ17							
	Ensure all of the team are happy to be taking the pre-registration pharmacist for placement	PF4	PF2						
	Make sure the provider organisations are 100% behind the project - then they will make it work	PF1							

Appendix 8 Placement propositions - chapter 5

Proposition subclass	Proposition	Who said so?										
Pharmacy assistant	Stock ordering	NS1										
	Cleaning the drug cupboard	NQ1										
	Fetching blister packs for TTOs	NS1										
	Picking up discharge medicines from pharmacy which are ready and taking them to the ward	NQ17										
	Fridge temperature monitoring	NQ17										
	Fetching drugs from the emergency cupboard	NS3										
	Datix reporting	NQ3										

General Pharmacy	POD checks	NQ17	CP4	PM5	PM4							
	Ordering medication	NQ3	NQ11	WP1								
	Medication history taking	NQ3	CP2	CP4	CP3	PM5	DT3	NS1				
	Medicines reconciliation	NQ5	CP4	PM4	PM5	DT3	NS1	WP1	DR3	DR5		
	Dispense medicines for patients on the ward	NQ16	CP4	PM5	NQ17							
	Prepare NOMAD trays on the ward	CP3	CP4									
	Transcription of medicines to fresh drug charts	CP4	DR3									
	Carrying out ward audits	WP1										
	CD audits	NQ4										
	Clinical pre-screening	CP3										

	Preparing discharges for the following day	NS1	WP1									
	Support the discharge letter process (ensure sufficient information available)	DT3										
	Checking discharge letters	WP1	DR3	DR1	DR3							
	Communicating with community pharmacy	WP1										
	Any activity which a technician does, a pre-reg should do	NQ17										
	Clinical Screening (ambiguity)	NQ4	CP2	WP1								
	Verify discharge prescriptions (ambiguity)	NQ5										
	Antibiotic stewardship	NQ12	NQ15	NS1	WP1	DR5						

Advanced Pharmacy	Medicines management	NQ11	NQ17									
	Therapeutic drug monitoring	NQ12	NQ15	NQ16	DR5							
	On-call practice	NQ12										
	Medicines review on patients who have been admitted following a fall	NS1	WP1									
	Answering questions from junior doctors*	DR3										
	Prompting consultants to consider medicines	DR5	DR1									
	Supporting deprescribing of medicines by highlighting possible patients to the ward staff	WP1	NS1	DR1	DR5							
	Challenge consultant decisions	NS1	WP1	DR1	DR5							

	Educating staff about medicines	NS1										
	Be familiar with prescribing	DR2										
	Information sharing	DR5										
	Pre-Reg not able to assess self-administration (legal issue)*	PM5	PM3									
	Giving advice; confusion over what advice allowed to give therefore guidance and training needed*	NQ2	NQ18	NQ1								
	Cannot work as the ward pharmacist	PM4										
	Giving advice; no advice should be given*	NQ3	NQ4	NQ5	DT3							

Patient-centred activities	Assess whether patients can take medicines out of the packets	NS1	WP1									
	Assessing if patients need large print labels or other devices	WP1	NS1									
	Talking to patients about how they manage their medicines	NS1	WP1	DR2	DR5							
	Talk to patients about their adherence to their medicines	NS1	WP1									
	Assess patient's ability to self-administer medication*	NQ12	NQ15	NQ16	NS1	WP1						
	Support more frail patients to manage their medicines	WP1										
	Counselling patients e.g. at discharge or on a drug round	NS1	WP1	NQ18	PF4	NQ14	NS2	NS3				

	Counselling patients (ambiguity – some need for structure here or crib sheet)	NQ3	NQ12	WP1								
	Counselling patients on specific medicines e.g. anticoagulation (need to go through a competency first)	CP1	PM5									
	Some counselling of patients could take place	CP3	PM3	PF4	WP1							
Work with Doctors	Attend formal teaching with medical students and foundation doctors	DR1										
	Spend time with the foundation doctors	NQ12										
	Board Rounds	CP2	NS1	WP1	DR5	DR1						
	Attending the Multi-disciplinary Team meetings*	NQ14	NQ16	NQ15	NQ12	NQ14	CP2	CP3	NS1	WP1	NQ11	

	Working on the frailty/older persons acute admission unit	NS1	DR5									
	Attending a consultant ward round	NQ11	CP4	PM3	DT3	DT2	NS1	WP1	DR5	DR1	WP1	NS1
	Attend consultant ward rounds in A & E	DR1	DR5									
	Attend family meetings	DR5										
	Support consultants to manage Parkinson's therapy	NS1	WP1									
	Shadow specialist nurses or specialist teams on the ward e.g. Parkinson's, AKI, anti-microbial (but teams need to know that they aren't qualified, and they can't give advice PM5)	PM4										
	Understanding patient flow and complex discharges	CP2	CP4	DT2	DT1							

Work with Nurses	(spend time with bed managers)											
	Weigh patients	DT1										
	Carry out patient observations	DT1										
	Observing a drug round should do*	NQ11	NQ14	NQ16	NQ11	CP2	PM3	DT2	DT1	DT3	NS2	
	Clerking in patients to the ward*	CP2	CP4									
	Personal care e.g. wash patients	NS2										
	Medicines administration (should do)	DR2										
	Taking blood (dependent on the individual pre-registration pharmacist[NQ12])*	NQ12	NQ15									

	Shouldn’t make beds	CP2	CP4									
	Shouldn’t wash patients	CP2	CP4	DT1								
	Should not take blood*	CP1										
	Medicines administration shouldn't do on their own (must observe nurse)*	DT1	DT2									
	Medicines administration shouldn’t do (for CPs shouldn't do as won't be doing that as pharmacists)*	NQ3	NQ4	CP1	CP2	CP3	CP4	PM5	NS3			
	Patient assessments alone (shadowing is ok)*	DT3	DT1	DT3								
Ward type criteria	Low pharmacy presence	NQ5										
	Consider using just one clinical area in the hospital for the placement	PF4										

	Low turnover and simple patients	NQ2	DT3	DT2								
Training prior to placement	Need for induction to the ward prior to commencing placement	PF4										
	Consideration for training requirements - manual handling patient contact may be needed	PF4										
	Clinical areas need to be prepared prior to the placement	PF4										
Personality of the pre-reg	Pre-reg will need to be innovative and flexible, nice people and good team players	PF3										
	Forthright, clearly spoken, self-motivated and who will speak up	CP2										

Who could supervise	Ward housekeeper	PF4										
	Ward clerks	NQ3	NQ5									
	Healthcare assistants	PF4										
	Assistant practitioner	PF4										
	Ward co-ordinator (person in charge)	NQ1	NQ3									
	Nurses	NQ3	NQ2									
	Doctors	NQ3										
Who couldn't supervise	Not a newly qualified pharmacist	NQ12	NQ11	NQ17	NQ15	NQ16						
	Anyone other than a pharmacist	NQ5	NQ3									
Pre-reg Guidance	Contribute to patient care whilst on placement	DT3										

	Integrated into the ward team	DT2										
	Pre-reg should be aware of their own responsibilities	NQ11										
	Guidance for what pre-reg do in certain situations e.g. screening	NQ4										
	Well-defined for what the pre-reg can do	NQ2	NQ15	NQ14	PF1	DT3						
	Rules for what pre-reg can do	NQ11	NQ13	PM5	PF1	DT2						
	Pre-reg's need to have awareness of the hospitals raising and escalating concerns procedure	PF1										
	Pre-reg should know what they are doing day-to-day	DT3										

	Pre-reg should always be working within their level of competency	PF1										
	Pre-reg should be aware of own limitations	NQ13	PM3	DT3								
Ward staff guidance	Staff should be aware of what is expected of the pre-reg	DT1	DT3									
	Ward staff to be aware of pre-reg limitations	PM5										
Knowing the role of the pre-reg	When attending pre-reg attending MDT, staff need to understand their role	NQ11										
	Pre-reg should have a full understanding of the plan for the patient	DT3	DT1									
	Pre-reg should understand the discharge process	DT1										

	Pre-Reg to understand the pressures doctors are under	DT1	DT2									

Appendix 9 Placement concerns - chapter 5

Concern subclass	Concern	Who said so?					
Generic concerns	Pre-reg year is already very busy	DT1					
	Pre-reg feels detached from pharmacy team	DT2					
	Pre-reg will lose identity as a pharmacist	PM5					
	Placement won't meet training needs of pre-reg	PM4					
	Reputation of pharmacy damaged if pre-reg makes mistake	PM2	PM5	PM4	CP3	CP4	WP1
	No benefits for pre-reg with the placement	PM4					
	Students may get upset by witnessing death on the ward	PF3					
	Holistic patient focus doesn't require the pre-reg to be on a ward - rather ethos of pharmacy needs to change	CP3	CP4	CP1			

Placement serves no purpose	Do the benefits of the placement outweigh the risks for what will be removed from the programme	CP3					
	What is the pre-reg year not currently fulfilling? How to assess and monitor that?	CP1	CP3	CP2			
	Why is this placement being done? Not clear what it is trying to achieve	CP3	CP4				
Patient care	Unconscious incompetence of the pre-reg dangerous	PM4	PM2				
	Pharmacy giving medicines risky for patients as pharmacy not aware of all that is going on with patients	DT2					
	Risk to patient safety	PM4	PM2	NQ3	NQ5	PM5	
Tutor specific concerns	Tutor uncomfortable leaving pre-reg supervision to nurse or medical team	PM4					
	Tutor signing off pre-reg based on another healthcare professionals' opinion who doesn't understand the GPhC competencies	PM5	CP3	CP4			

	Tutor not prepared to sign pre-reg off at the end as can't be confident the pre-reg has demonstrated the competencies	CP4					
	Tutor is expected to pick up the evidence produced from the placement	PM5					
	Pre-reg tutor uncomfortable with signing pre-reg off for ward placement	PM5					
	If pre-reg is writing care plans on the ward someone has to review that work with them	PM3					
Learning outcomes	Outcomes for this placement aren't clear	CP3	CP1				
	Who will be responsible for making sure learning outcomes are met	PM5					
	Uncertain of outcomes for the pre-reg	PM5					
	Pre-reg distracted from achieving their learning outcomes by staff	PM5					
GPhC	Liability with the placement, particularly medicines administration - how will it work?	CP2					

	Placement will turn into a shadowing exercise where they can't demonstrate competencies	CP3	CP2				
	No guarantees pre-reg will be able to achieve all their competencies	CP1	DT3	DT2			
	Lack of supervision runs legal risk with the GPhC	PM5					
	Pre-reg not able to meet the performance standards on the ward	PM4	CP3				
	Legal risk of what the pre-reg is allowed to do	PM5					
	On a ward the pre-reg might not be able to receive the training that the GPhC feels they should	PM5					
	Would the placement achieve what the GPhC wants it to achieve	PM5					
	Other healthcare professionals don't understand pharmacy professional competencies	PM5					

	Could other healthcare professionals assess a pre-reg against the performance standards to the same quality a pharmacist would?	PM1					
Supervision	No pharmacist supervision will result in pre-reg not learning the right information or how to do the right thing	PM3					
	Pre-reg can't do anything which isn't checked by a pharmacist	CP3					
	Ward pharmacist would play a pivotal role in this placement - concern too many fingers in the pot	CP4					
	Ward manager is going to be responsible for what the pre-reg does and how they're supervised	CP3	CP2				
	Daily oversight of pre-reg is difficult to achieve when they aren't in pharmacy department	CP3					
	Pre-reg unsupervised on the ward is uncomfortable	PM2	PM4	PM5	NQ12		
	Pre-reg model of supervision should not mirror FY1 supervision - not acceptable for them to be abandoned	PM5	CP4	CP3			

	How would personality of the pre-reg cope being unsupervised - some would not cope	PM5					
	Worry that other professions would want pharmacists to supervise their pre-registration students	PM2					
	Additional work for nurses to supervise	CP3	CP2	CP4	CP1	PF1	
	Cannot guarantee correct level of supervision	CP2					
	Nurses have to supervise their own students	CP2	CP4				
	Nurses don't have enough time to supervise the pre-reg	PM2					
	No pharmacist supervision will result in pre-reg not learning the right information or how to do the right thing	PM2					
	No pharmacist supervision will result in pre-reg doing menial roles	PM2					
	Healthcare professionals supervising need to have a basic knowledge of medicines and some do not	PM4					

	Pharmacy staff too busy to supervise pre-reg on placement	PM5					
	Non-pharmacist supervision is not appropriate – don't know enough about medicines	NQ5					
Ward team	Volume of pre-registration students on wards (could be saturated learning environments)	PF1	PF2	PF3			
	Would the nursing staff support this	DT1	DT3				
	Risk of abuse of pre-reg so they do things they shouldn't really do	NQ13					
	Ward staff are transient so may not get the 'team' feeling	PM4	CP2	CP4			
	How would a pre-reg be able to fit into the ward routine when a lot of it isn't drug based	CP1	CP4				
	If on a ward which has a pharmacist all day, might as well just be with the pharmacist	CP3					
	How the pre-reg would manage fitting into a team when the team is busy	PM2	PM4				

Advice giving	Pre-reg not confident or lacks knowledge to provide correct advice	DT3					
	Unqualified therefore legally not covered to give advice to healthcare professional (shouldn't open BNF to give dosage advice)	PM5					
	Any advice given would have to be vetted by a pharmacist and that may not be achievable on placement	PM4					
Exam	Fewer rotations leave pre-reg feeling more nervous about sitting exam	NQ13					
	No guarantee pre-reg will be able to pass exam	CP4					
Overall pre-reg year	Clinical knowledge will come at the expense of stores/procurement knowledge	DT2					
	Exposure to different types of patients on different wards is reduced	PM4	PM5				
	What will be removed from the pre-reg year to accommodate the placement	CP2	CP3				

Understanding of role	Discrepancy between ward staff expectations for the pre-reg and pharmacy expectations	DT3					
	Ward staff think the pre-reg is already qualified and expect them to deal with specific queries	DT3					
	One uniform for all pharmacy staff doesn't help staff to understand the different roles	DT1	DT3				
	Novelty of the pre-reg placement, people don't know who they are or what they do	PF3					
	Healthcare professionals don't understand the role of the pre-reg	CP1	CP4	NQ5	DT1	DT3	DT2
Ward work	Physician assistants and other unregistered roles, concerns over how they operate	CP2	CP4				
	Role overlap pre-reg and other professionals; potential for conflict	DT3					
	Run out of things to do on the ward	NQ11	NQ18				
	Pre-reg will be a sitting lemon on the ward	CP2	CP1	CP4			

	Pre-reg overconfident on the ward (could lead to patient harm if wrong advice given)	CP1	CP4	NQ16	NQ4	NQ1	NQ5
	If pre-reg has to do research and look everything up then they won't be useful to the ward	PM4					
	Not enough for the pre-reg to do on the ward	PM1					
Registration	Wreck the pre-reg year for the trainee	CP4					
	Professional registration is on the line	CP4					
Recruitment	No control over who is recruited for the pre-reg	CP4					
Personality of the pre-reg	Success of placement will depend upon the individuals themselves	PF3	PF1	NS2			
	Some pre-reg's thrive in stressful environment whereas others crumble	DT3					
	Pre-Reg would feel nervous being on a ward without a pharmacist	NQ11					

	Pre-Reg overwhelmed by placement if on AMU	DT3					
	Lack of knowledge the pre-reg has	NQ5	NQ4				
Nursing fears	Nursing job is already being eroded	NS3	NS2				
	Nursing job is becoming more task-orientated	NS3	NS2				
	Pre-Reg not to take over nursing role	NS3	NS2				
	Nurse needs to know what medicines patient is taking therefore medicines administration shouldn't be taken away	NS3	NS2				

Appendix 10 Placement design 7-weeks at hospital 2 – chapter 5

Prior to Placement	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6/7
Introduce self to ward staff prior to commencing placement	Ward Induction - ward staff to have input into this; bay of patients and assigned to one nurse	Competency assessments (finish obtaining if not already completed) for counselling patients	Antibiotic stewardship	Observation of clerking in processes to the ward	Clerk in patients to the ward with junior doctors	Pre-reg to work long day(s) if wishes to
Work with pre-reg tutor and ward supervisor to identify personal learning plan over course of placement	Pharmacy activities pre-reg familiar with; POD checks, Drug History, Ordering medication, Medicines Reconciliation	Patient observations carried out independently	Counselling patients (if obtained competency)	Therapeutic drug monitoring (if opportunity arises)	Opportunity to observe patient journey from admittance to theatre to ward to rehab. Opportunity for CBD on this.	
Competency assessments for ward-based	Competency assessments for counselling	Desirable - attend consultant ward	Clinical pre-screening of medicine charts			

activities completed	patients on their medicines (consider whether to be assessed by pre-reg tutor, ward pharmacist or both)	round for bay of patients			
Relevant trust training undertaken e.g. manual handling	Board Rounds (to attend first few with pharmacist to introduce pre-reg to the ward team)	Work with ward staff to identify opportunities to undertake audit for the ward	Attendance at consultant ward round		
MI training prior to placement	Patient Observations shadowing/training (work with HCA or nursing mentor to attain competence in this)				
Spend time with bed manager prior to placement	Observe drug rounds (attend drug rounds with nursing mentor - If possible, talk to patients about their medicines after the drug round)				

Assessments and Opportunities						
Pre-reg tutor to determine quantity/ strictness of evidence collected/ number of assessments undertaken during placement	Assessment: Reflective essay on attendance at medication rounds	Assessment: Completion of counselling competency assessments and Case Based Discussion on a patient	Assessment: Review of evidence and performance standards obtained thus far on placement	Assessment: Evidence on therapeutic drug monitoring for a patient	Assessment: mini-PAT 360 feedback	Assessment: Review of evidence and performance standards obtained thus far on placement
	Opportunity: Conduct a medicine review on a patient whose observations were out of desired range	Opportunity: Attendance at consultant round in bay of patients - Case Based Discussion on patient seen during ward round	Opportunity: Working alongside antimicrobial pharmacist/consultant to promote antibiotic stewardship at ward level	Opportunity: Liaise with pharmacist to appropriately advise re: therapeutic drug monitoring	Opportunity: Observation of patient journey through the hospital - potential of Case Based Discussion on this	Opportunity: Pre-Reg to seek out own learning opportunities

	Opportunity: To liaise with ward pharmacist after attendance at the board round to discuss relevant specific patients	Opportunity: Reflective evidence on where boundaries lie		Opportunity: Reflective evidence on where boundaries lie

Appendix 11 Placement design 13-weeks at hospital 1 – chapter 5

Prior to placement	Weeks 1-2	Weeks 3-4	Weeks 5-6	Weeks 7-8	Weeks 9-10	Weeks 11-12	Week 13
Introduce self to ward staff prior to commencing placement	Ward Induction; (ward sister/staff to have input into what induction will look like)	Waste management optimisation (liaising with ward staff to optimise stock and stock control)	Counselling patients on medicines	Antibiotic stewardship	Medicines administration (more hands-on)	Opportunity to spend time in the day assessment unit	Any other opportunities pre-reg wants to utilise for learning
Work with pre-reg tutor and ward supervisor to identify personal learning plan over course of placement	Understanding patient flow/bed management; spend time with discharge co-ordinator	Desirable – attending consultant ward round	Patient self-administration of medicines assessments	Therapeutic Drug Monitoring	Advanced patient self-administration of medicines assessment (contacting nursing home, community pharmacy, relatives)	Opportunities to work more closely with junior doctors? Perhaps with writing discharge letters to the GP, particularly in relation to	Audit presentation to ward staff

						medicine changes or looking out for deprescribing opportunities	
Competency assessments completed for ward-based activities	Board rounds (pharmacist to attend board round initially with pre-reg to introduce them to team Or nurse who is working with the pre-reg to look after)	Patient observations conducting independently	Attend course for medicines administration/undertake training	Attend MDT Meetings	Long day shifts on the ward	Audit write-up	Handover from first student to second student so there is one week of overlap

Relevant trust training undertaken e.g. manual handling, preceptorship training, observations training, medicines administration training, other Trust induction packages which may be relevant	Patient observations training (from a HCA or nurse? Person to do this to be identified)	Patient counselling competency checking?	Attend consultant ward round	Opportunity to attend teaching sessions with junior doctors	Handover of patients – to be more involved with	Medicines reviews on patients admitted to frailty; particularly those who have fallen	
MI training prior to placement	Observation of Medicines Administration (working with nursing mentor)	Patients self-administration of medicines assessment - competency checking?	Audit(s) - to work with ward to identify	Audit data collection	Audit analysis		
Spend time with a bed	Patient grounding – ensuring patients have enough drinks		Observe handovers	Observe handovers			

manager prior to placement	(working with HCA and nursing mentor to care for patients in their bay)						
All staff clear of their role and responsibility to care of the pre-reg during placement	POD checks, MR, ordering medicines, clinical pre-rescreening, checking doctor chart rewrites (just for their bay of patients?)						
Assessments and Opportunities							
Pre-reg tutor to consider how strict assessments should be e.g. student must have completed 10 mini-CEX and 5 CBD and 5	Assessments: Reflective evidence on new skills and working practices e.g. observations	Assessments: Competency assessments and mini-CEX opportunity for patient counselling	Assessments: Portfolio of evidence and performance standards obtained at halfway point during placement; review of	Assessments: Case Based Discussion on Antibiotic stewardship or therapeutic drug monitoring	Assessments: Medicines administration reflective evidence	Assessments: Mini-PAT 360 feedback	Assessment: Review of portfolio of evidence

mini-PAT by the end of placement? Tutor to decide what is realistic; individual target for each student?			learning plan set at start of placement				
	Opportunity: To conduct a medicine review on a patient whose observations were out of desired range	Opportunity: Liaise with ward staff regarding management of medicines on the ward; what can pharmacy do to help?	Opportunity: Work with ward staff to identify opportunity to undertake audit	Opportunity: Work with antimicrobial pharmacist and consultant to optimise antibiotic prescribing on the ward	Opportunity: Experience long day(s) on the ward - observe/take part in handovers	Opportunity: Work alongside doctors in day assessment unit	Opportunity: Anything else to be learnt
	Opportunity: To liaise with ward pharmacist regarding patient care (using information gathered from	Opportunity: Reflective evidence on where boundaries lie - what the pre-reg feels	Opportunity: Case Base Discussion on patient seen on the ward round	Opportunity: Attend teaching sessions with junior doctors	Opportunity: Liaising with primary care providers to support patient managing their	Opportunity: Reflective evidence on where boundaries lie	

	board round and other activities) e.g. planned discharges or identified medicines management issues	comfortable doing within their competence and what they are uncomfortable with (and why)			medicines in the community		

Appendix 12 Placement design prior to advisory panel (both hospitals) – chapter 5

General Placement Guidance

The pre-registration pharmacist will be under the day-to-day supervision of their ward supervisor; (staff member to be confirmed). The ward supervisor will oversee the activities of the pre-registration pharmacist on the ward, ensuring they are supported and appropriately supervised over the course of the placement.

The role of the pre-registration tutor will be to support the pre-registration pharmacist throughout their placement, liaising with staff and monitoring the pre-registration pharmacists' progress during their placement. The pre-registration tutor will be expected to conduct (at the minimum) two weekly meetings with their trainee throughout their placement and also conduct workplace assessments (as listed below) with the pre-registration pharmacist during their placement.

The ward pharmacist and Older People's Medicine pharmacy team will be expected to support the pre-registration pharmacist by responding to queries regarding clinical advice. The pre-registration pharmacist will also be expected to liaise with the ward pharmacy team regarding patient discharge and clinical information pertaining to patients which is relevant in the context of their medicines management.

All paperwork/entries made into medical notes/drug charts etc. will be countersigned by a registered healthcare professional. There will be consistent and ongoing dialogue between ward supervisor, pre-registration tutor and pre-registration trainee throughout placement.

Introductions to ward staff and development of learning plan

The pre-registration pharmacist should seek out their ward supervisor and ward staff prior to attendance at the placement so there is the opportunity to familiarise themselves with their supervisor and the ward environment (this

may include attending the ward as a pre-registration pharmacist in their usual capacity prior to beginning the placement). A learning plan should be developed between the trainee, tutor and ward supervisor prior to commencement of the placement in order to enable each individual to be aware of the learning needs and objectives of the trainee during their placement.

Learning objectives

By the end of the placement, the trainee will be able to:

- Perform usual pharmacist ward based activities under supervision (Mini-CEX, CBD, COT, care plans)
- Demonstrate effective time-management, prioritisation and organisational skills (Performance Standards)
- Demonstrate effective inter-professional working (Mini-Pat)
- Evaluate their learning experience during placement (Reflective evidence)

Preparation prior to placement

Pre-registration pharmacists prior to undertaking their placement should have completed and/or received;

- POD competency assessment
- Drug history competency assessment
- Medicines Reconciliation competency assessment
- Discharge planning training and assessment
- Stock ordering and acquisition procedures
- Clinical monitoring training
- Pharmaceutical care plan training
- Medicines Information training
- Patient observations training
- Familiarisation with relevant guidelines which are applicable to placement ward

- Discussed and agreed working practices with ward pharmacist, pre-registration tutor and ward mentor in a personalised learning plan
- Assessment training; Mini-CEX assessments, Consultation Observation Tool, Case Based Discussion, Intervention Recording, Pharmaceutical Care Plans, Reflective Evidence and Mini-PAT

Staff training that needs to have been received and completed;

- Ward staff have clear understanding of role of pre-registration pharmacist
- Ward staff have received training in how to complete some of the relevant competency assessments e.g. mini-CEX and Consultation Observation Tool

Ward Induction – to be confirmed with nursing and medical staff

The ward induction should be designed and managed by ward supervisor (staff member TBC at hospital 2, ward sister at hospital 1) who will liaise and work with members of the multi-disciplinary team to facilitate introducing pre-registration pharmacist to different members of the ward team. This could include; spending time with FY1, allied healthcare professionals etc. The ward induction should aim to ground the pre-registration pharmacist in the ward environment and introduce them to different members of the healthcare team.

Timetable

Activity undertaken	*Prior to Placement*	Week 1	*Week 2-3*	*Week 4-5*	*Week 6-7*	*Week 8-9*	*Week 9-10*	*Week 11-12*	*Week 13*
Learning agreement	Develop learning plan								
Pharmacy Activities; POD, MR, Ordering	Achieved competency	Conducts independently referring to ward pharmacist when necessary							
Discharge Planning	Achieved competency	Utilises Medicines Management skills to support staff with patient discharges				Practice discharge letter proofing		Competency for discharge letters	
Ward Induction		Induction							
Patient Observations		Training	Conduct observations independently						
Pharmaceutical care planning		Training and practice			Implementation to support ward pharmacist				
Board rounds			Attendance and Observation			Contributes if appropriate			
Medicines administration			Observation at lunchtime rounds		Training on Med admin	Support nurse medicines administration & assessment for competency			
Self-administration of Medicines Assessment			Observation and practice		Competency assessment	Conducts assessments independently; liaising with primary care providers on discharge			
Patient Counselling			Orientation from ward pharmacist where pre-reg will receive training and opportunity to practice			Competency assessment for patient counselling; conduct independently			
Consultant ward round			Attendance and Observation; supporting medical team and communicating with pharmacist						
Responding to staff and patient MI queries			Practice and implement responses under ward pharmacist supervision						
Guidelines implementation e.g. Antibiotic Stewardship	Familiarisation with relevant guidelines		Training and practice		Implement - supervised	Implementation independently			
Work in the day assessment unit			Observation and Training		Practice under supervision	Work under supervision of healthcare professional to assist with clerk-in patients			
Audit					Identification of audit topic and completion of audit data collection and write-up				Present ation
Opportunistic									
Additional activities	Attend doctor training	Work long days	Work weekend		Patient handovers	Work with specialist teams	Working in day assessment unit	Observe procedures	Work in ED

Patient Observations

The pre-registration pharmacist should receive training on conducting patient observations prior to commencing their placement so that they may assist with this aspect of patient care. Patient observations need not be a routine/daily activity for the pre-registration pharmacist if this not perceived to be appropriate by the ward supervisor and pre-registration pharmacist.

Pharmaceutical care planning

The pre-registration pharmacist should receive training and the opportunity to practise undertaking pharmaceutical care plans for patients under their care. The pre-registration pharmacist to work with their ward supervisor to identify appropriate patients to undertake pharmaceutical care plans for. The pre-registration tutor should support the pre-registration pharmacist in developing of care plans.

Board rounds

The pre-registration pharmacist should attend the board rounds under the supervision of a qualified healthcare professional. As the placement continues, the pre-registration pharmacist may be given more autonomy by their ward supervisor to attend the board round on their own and feedback information to ward supervisor/ward pharmacist as appropriate.

Attendance at board round should also provide pre-registration pharmacist opportunities to learn of discharge information relating to specific patients, the pre-registration pharmacist should then apply this knowledge to manage their medicines appropriately and prepare for discharge.

Medicines administration

The pre-registration pharmacist may utilise opportunities to observe the lunchtime medication round with a qualified nurse. When appropriate, at a time considered between the ward supervisor and pre-registration tutor, the pre-registration pharmacist may attend the morning/evening medication

round with a nominated member of ward staff. The pre-registration pharmacist should attend this in a primarily observational role.

Patient counselling

The pre-registration pharmacist should undertake a competency assessment during their placement on counselling patients on their medication. The pre-registration pharmacist should observe, receive training, practice and then complete a competency assessment to perform this activity independently on the ward. Once this competency assessment has been completed, the pre-registration pharmacist should prepare to counsel patients/relatives on their medicines. The pre-registration pharmacist should work within their own professional competence and be aware of their own limitations when counselling patients. When appropriate, the pre-registration pharmacist should seek support from a qualified pharmacist prior to conducting a consultation to affirm that they are giving the relevant and appropriate advice to the relevant patient.

During these consultations with patients about their medicines, the patients will have had opportunities to ask the pre-registration pharmacist questions. However, it is likely that questions asked to the pre-registration pharmacist may differ patient to patient. The pre-registration pharmacist should have an awareness of their own limitations and use the judgement of their own competence to determine whether it is appropriate to answer a patient's question about a medication. If the pre-registration pharmacist is unsure of an answer to give to a patient regarding a medication, they should use the resources available to identify the answer and run their answer past a qualified pharmacist before informing the patient.

Consultant ward round

Pre-registration pharmacists should attend the consultant ward round in an observation/learner capacity during their placement. If asked for clinical advice during the consultant ward round, the pre-registration pharmacist should not answer questions regarding clinical advice unless they have run this advice past a qualified pharmacist first. Exceptions may be considered in

the case of simple questions – pre-registration pharmacist will be expected to use their own clinical judgement to determine whether the advice they are being asked to give is within their competency or not.

The pre-registration pharmacist may highlight any prescription discrepancies highlighted during the drug history process to the medical team in order to reconcile the patients' medicines during the consultant ward round.

If the pre-registration pharmacist wishes to make a recommendation to alter a patient's therapy, they should first run their recommendation past a qualified pharmacist before discussing it with the medical team and the patient e.g. in the cases of deprescribing/switching therapies.

Medicines information queries

The pre-registration pharmacist should have completed some training in Medicines Information prior to their placement. When asked questions from ward staff and patients alike, the pre-registration pharmacist should use the resources they have learnt about to help them answer the query. The pre-registration pharmacist should talk through their answer with a qualified pharmacist prior to informing the enquirer of the information.

Guidelines implementation

The ward pharmacist, pre-registration tutor and ward supervisor should direct pre-registration pharmacist to most appropriate guidance the trainee needs to familiarise themselves with at the start of their placement.

Self-administration of Medicines Assessment

The pre-registration pharmacist should receive training from a qualified pharmacist prior to undertaking a self-administration of medicines assessment on a patient. The pre-registration pharmacist should also undertake some self-administration of medicines assessments whilst being observed by a qualified pharmacist who can provide feedback on their assessment and assess their competency to assess patients thereafter.

The pre-registration pharmacist should support ward staff and patients with respect to patient self-administration. Part of this process will include being present to have open and clear dialogue between patients and prescribers to ensure effective communication regarding medication from one to the other.

Pre-registration pharmacists through this work, may identify patients who need large print labels, or other devices to enable patients to access their medicines safely. The pre-registration pharmacist should support patients seeking to manage their medicines independently in hospital.

Day assessment unit

The pre-registration pharmacist may have the opportunity to work in the day assessment unit as part of their placement and will have opportunities to observe patients' being clerked into the unit and their subsequent management.

Provisional plan for formative assessment/monitoring activities

Formative assessment	Week						
	1	2	3	4	5	6	7
Mini-Cex		✓	✓	✓	✓	✓	✓
Consultation Observation Tool		✓	✓	As needed thereafter			
Case Based Discussion				✓			✓
Intervention Recording					✓		✓
Pharmaceutical Care Plans				✓		□	
Reflective Evidence			✓		✓		
Mini-PAT							✓

Appendix 13 GPhC Application and mapping of performance standards – chapter 5

Placement on Hospital Ward – 13 *weeks* NB: The trainee will be meeting with their Pre-reg tutor at least once every two weeks.		
Week 1		
Induction to the ward placement • Meet the team • Roles of healthcare professionals within the team • Overview of working hours and range of activities • Supervision and mentoring arrangements • Overview of how ward operates • Orientation of the ward; location of ward items e.g. equipment, medicines • Understand transfer of care issues	**GPhC Performance Standards:** A1.1 A1.4 A1.5 A2.3 A5.1 – A5.5 B1.1 – B1.11 B2.1 – B2.3 B2.5– B2.6	**Standard 10 Outcomes:** 10.2.3 j,k,l,n 10.2.5 a,b,c,d
Specific skills training • Patient Observations training • Use of any ward computer software pre-reg not already familiar with • Orientation of medical notes • Answering the ward telephone • Training on accessing patients' records and; ○ viewing pathology results ○ viewing medical history ○ admitting a patient to the ward on the computer system discharging a patient from the ward on the computer system	A1.1 – A1.8 A2.1– A2.4 A3.1 A4.1 A4.5 A5.1 – A5.7 B1.1- B1.12 B2.1 – B2.3 C1.11 C2.4 C2.11	10.1 h 10.2.2 a 10.2.3 i,j,k,l,n 10.2.4 a,c,h 10.2.5 a,b,d,f,g

Placement on Hospital Ward - Weeks 2 & 3		
Attendance at Board Rounds (Red to Green meetings) • Attend board round, making relevant notes regarding patient care • Communicate relevant information regarding patients' medicines and discharge information to ward pharmacist and ward staff via handover sheets and whiteboard magnets • Lead Board Round with support from staff	**GPhC Performance Standards:** A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A4.6-A4.7 A5.1-A5.7 B1.1-B1.12 B2.1-B2.3 B2.5-B2.7 C2.1-C2.4 C2.11	**Standard 10 Outcomes:** 10.1 a,c,h 10.2.1 b,c,e,f,h 10.2.3 k,n 10.2.4 d,h 10.2.5 a,b,f,g,h
Attendance at medication administration rounds • Attend administration rounds, making relevant notes regarding administering medication to patient group • Support ward staff to crush and disperse medicines to administer to patient • Support ward staff to prepare and administer IV medication to patients	A1.1-A1.8 A2.1-A2.4 A3.1-A3.5 A4.1-A4.2 A4.4-A4.7 A5.1-A5.7 B1.1-B1.12 B2.1-B2.6 B2.9 C1.2-C1.11 C2.1-C2.9 C2.11	10.1 a,b,c,d,e,f,g,h,i 10.2.1 a,b,c,d,e,f,h 10.2.2 b,c,d,e,f,g,h,I,j 10.2.3 a,b,c,d,e,f,g,h,i,j,k, l,m,n 10.2.4 a,b,c,d,e,f,g,h, 10.2.5 a,b,d,f,g,h
Medicines management at ward level • Assist ward staff with stock control • Review of medication stocked on ward • Take responsibility for updating patient whiteboard with: ○ discharge information ○ TTO status • Assist ward and pharmacy staff in proactive discharge medication preparation • Support clinical team in monitoring therapeutic drug levels for specified patients and drugs	A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A4.1-A4.8 A5.1-A5.7 B1.1-B1.12 B2.1-B2.9 C1.9 C1.11-C1.12 C2.1-C2.9 C2.11	10.1 d,e,f,g,h 10.2.1 b,c,d,e,h 10.2.2 d,e,f,h,i,j 10.2.3 a,b,c,d,e,f,g,h,i,j,k, l,m,n 10.2.4 a,d,e,f,g,h, 10.2.5 a,b,d,f,g,h

Placement on Hospital Ward - Weeks 4 & 5		
Attendance at clinical ward rounds • Attend ward round, making relevant notes regarding patient care • Communicate relevant information on specific patients to ward pharmacist • Observe healthcare professional-led patient consultations • Witness history-taking sessions by other healthcare professionals • Witness multi-disciplinary team decision-making process • Consider the role of the pharmacist as a member of the multi-disciplinary team	**GPhC Performance Standards:** A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A4.1-A4.8 A5.1-A5.7 B1.1-B1.12 B2.1-B2.6 C1.3-C1.5 C1.10 C2.1-C2.11	**Standard 10 Outcomes:** 10.1 a,b,c,d,h 10.2.1 a,b,c,d,e,f,g,h 10.2.2 b,c,d,e,f,g,h,i 10.2.3 c,i,k,l,n 10.2.4 a,b,c,d,e,f,g,h, 10.2.5 a,b,d,e,f,g,h
Patient Counselling and Treatment • Be observed conducting patient-centered consultations ○ with patients ○ with patients' relatives • Use the correct terminology and processes when contacting patients' relatives or care providers to ensure confidentiality is maintained • Conduct supervised history-taking from patients • Assist the team in counselling patients, if applicable • Respond to patient medicine queries using an evidence-based approach • Gather feedback from patients and staff on own counselling technique • Identify areas for improvement when counselling patients • Help to create a holistic clinical management plan for a patient which takes into consideration their physical, social and emotional needs	A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A4.1-A4.8 A5.1-A5.7 B1.1-B1.12 C1.2-C1.5 C1.8 C1.11 C2.1-C2.4 C2.7-C2.9 C2.11	10.1 a,c,d,e,h,i 10.2.1 a,b,c,d,e,f,g,h 10.2.2 b,c,d,e,f,g,h,i 10.2.3 g,h,i,j,l,n 10.2.4 a,b,c,d,e,f,g,h, 10.2.5 a,b,d

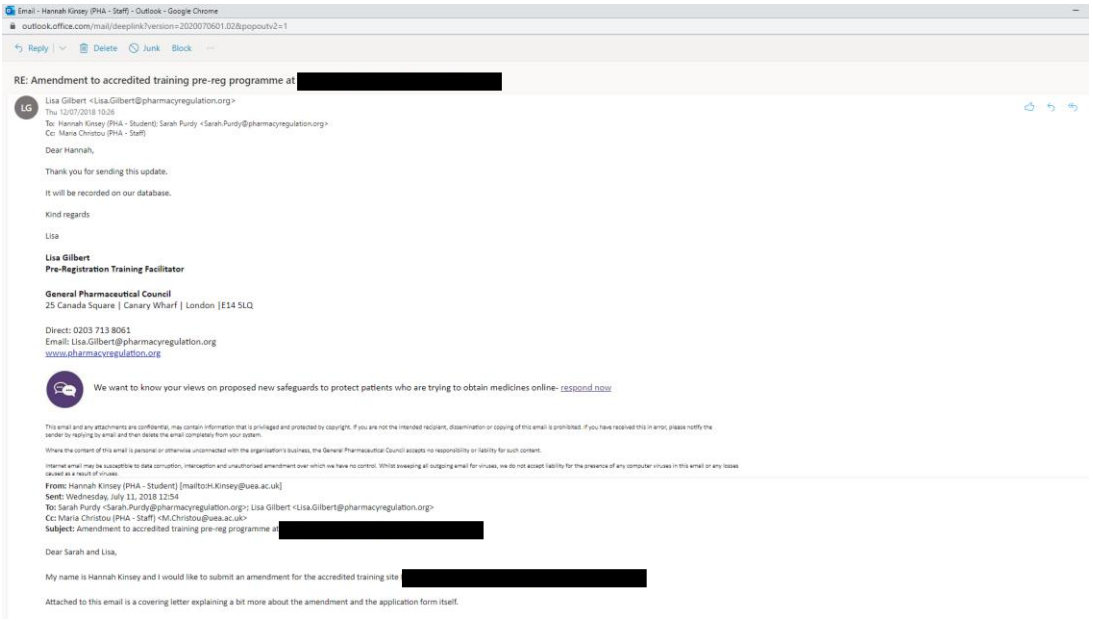
Placement on Hospital Ward - Weeks 6 & 7		
Audit • Agree an audit topic and undertake literature search • Define audit standards **Medicines Information** • Answer medicines information queries from ward staff using a variety of different resources • Implement responses to queries under pharmacist supervision • Contribute to improving patient care through accessing Medicines Information resources • Communicate answers to Medicines Information queries clearly to the appropriate audience **Guidelines implementation** • Use current guidelines and reference sources to assess the suitability of current treatment regimes • Review patients' clinical notes, referring to current treatment guidelines • Work with team to implement safe use of trust guidelines in patients' treatment plans where appropriate • Identify guidance which is not widely implemented and communicate this to ward team	**GPhC Performance Standards:** A1.1-A1.2 A1.6-A1.8 A2.1-A2.4 A3.1-A3.5 A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A4.6-A4.8 A5.1-A5.7 B1.1-B1.12 B2.1-B2.6 C2.1-C2.4 C2.11 A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A4.1-A4.2 A4.4 A4.6-A4.7 A5.1-A5.7 B1.1-B1.12 B2.1-B2.3 B2.5-B2.6 B2.9 C1.3-C1.5 C1.11 C2.1-C2.4 C2.7 C2.11	**Standard 10 Outcomes:** 10.1 d 10.2.1 g 10.2.4 h 10.2.5 a,b,c,d,e,f,g,h 10.1 a,b,c,d,e,h 10.2.1 b,c,d,e,g,h 10.2.2 b,c,e,g,h,i 10.2.3 a,b,c,d,e,k,n 10.2.4 d,e,f,g,h, 10.2.5 a,b,c,d 10.1 a,b,c,d,e,f,g,h 10.2.1 b,c,d,e,h 10.2.2 a,c,d,e,f,g,h,I,j 10.2.3 b,c,d,e,f,g,h,k,m,n 10.2.4 a,c,d,e,f,g,h, 10.2.5 a,b,c,d,e,f,g,h

Placement on Hospital Ward - Weeks 8 & 9		
Audit *(continued)* • Pilot data collection tool • Collect audit data	**GPhC Performance Standards:** A1.1-A1.2 A1.6 A2.1-A2.4 A4.1 A4.6-A4.7 B2.3	**Standard 10 Outcomes:** 10.1 d 10.2.1 g 10.2.4 h 10.2.5 a,b,c,d,e,f,g,h
Patient-centred care on discharge • Review clinical discharge summaries • Discuss medicine discharge summaries with patients and carers ○ Clarify questions patients may have regarding their individual discharge summary • Assist ward and pharmacy staff to facilitate discharges in a proactive manner • Attend Care Home visits and/or home visits with a healthcare professional e.g. Occupational Therapist • Support patients to manage their medicines at home • Support ward staff to facilitate anticipatory medicines discharges	A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A4.1-A4.2 A4.4-A4.8 A5.1-A5.7 B1.1-B1.12 B2.5-B2.6 B2.9 C1.4 C1.8 C2.1-C2.4 C2.7-C2.9	10.1 a,b,c,d,e 10.2.1 a,d,e,f,h 10.2.2 b,c,d,e,f,g,h,i 10.2.3 d,e,n 10.2.4 a,d,e,f,g,h, 10.2.5 a,b,d

Placement on Hospital Ward - Weeks 10 & 11		
Teaching session • Agree topic and audience • Devise an evaluation form for attendees and a presenter feedback form	**GPhC Performance Standards:** A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A5.1-A5.7 B1.1-B1.12 B2.1-B2.3 B2.5-B2.9 C2.4	**Standard 10 Outcomes:** 10.1 f,g 10.2.1 e 10.2.5 a,b,c,d,f,g,h
Audit *(continued)* • Analyse data • Agree recommendations • Write audit report • Prepare a summary presentation of audit findings	A1.1-A1.2 A1.6 A2.1-A2.4 A4.1 A4.6-A4.7 B2.3	10.1 d 10.2.1 g 10.2.4 h 10.2.5 a,b,c,d,e,f,g,h
Patient-centred care on discharge *(continued)* • Communicate with the relevant primary care providers regarding patients' discharge medicines e.g. community pharmacy • Support patients to manage their medicines at home • Have an awareness of safeguarding issues and learn how to initiate appropriate actions • Support patients to use aid devices to manage their medicines e.g. Haleraids	A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A4.1-A4.2 A4.4-A4.8 A5.1-A5.7 B1.1-B1.12 B2.1-B2.9 C1.2-C1.5 C2.1-C2.9 C2.11	10.1 a,b,c,d,e 10.2.1 a,d,e,f,h 10.2.2 b,c,d,e,f,g,h,i 10.2.3 d,e,n 10.2.4 a,d,e,f,g,h, 10.2.5 a,b,d

Placement on Hospital Ward - Weeks 12 & 13		
Audit *(continued)* • Presentation of audit findings • Implement recommendations as appropriate	**GPhC Performance Standards:** A1.1-A1.2 A1.6 A2.1-A2.4 A4.1 A4.6-A4.7 B2.3	**Standard 10 Outcomes:** 10.1 d 10.2.1 g 10.2.4 h 10.2.5 a,b,c,d,e,f,g,h
Teaching session *(continued)* • Deliver teaching session to ward staff • Deliver teaching session to pharmacy staff • Gather feedback on teaching sessions	A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A5.1-A5.7 B1.1-B1.12 B2.1-B2.3 B2.5-B2.9 C2.4	10.1 f,g 10.2.1 e 10.2.5 a,b,c,d,f,g,h
Work shift hours • Agree working hours • Observe patient handover from night to day shift and vice versa • Conduct supervised patient hand over from day to night shift • Observe morning activities of ward staff • Observe writing of late discharge prescriptions • Evaluate strategies which the pharmacy department could implement to prevent late discharges	A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A4.1-A4.2 A4.4-A4.8 A5.1-A5.7 B1.1-B1.12 B2.1-B2.9 C1.2-C1.5 C2.1-C2.9 C2.11	10.1 a,b,c,d,e,f,g,h,i 10.2.1 a,b,c,d,e,f,g,h 10.2.2 a,b,c,d,e,f,g,h,i,j 10.2.3 a,b,c,d,e,f,g,h,i,j,k,l, m,n 10.2.4 a,b,c,d,e,f,g,h, 10.2.5 a,b,c,d,f,g,h

Appendix 14 GPhC Approval for placement – chapter 5



Email - Hannah Kinsey (PHA - Staff) - Outlook - Google Chrome

outlook.office.com/mail/deeplink?version=2020070601.02&popoutv2=1

Reply | Delete Junk Block

RE: Amendment to accredited training pre-reg programme at [redacted]

Lisa Gilbert <Lisa.Gilbert@pharmacyregulation.org>
Thu 12/07/2018 10:26
To: Hannah Kinsey (PHA - Student); Sarah Purdy <Sarah.Purdy@pharmacyregulation.org>
Cc: Maria Christou (PHA - Staff)

Dear Hannah,

Thank you for sending this update.

It will be recorded on our database.

Kind regards

Lisa

Lisa Gilbert
Pre-Registration Training Facilitator

General Pharmaceutical Council
25 Canada Square | Canary Wharf | London |E14 5LQ

Direct: 0203 713 8061
Email: Lisa.Gilbert@pharmacyregulation.org
www.pharmacyregulation.org

We want to know your views on proposed new safeguards to protect patients who are trying to obtain medicines online- respond now

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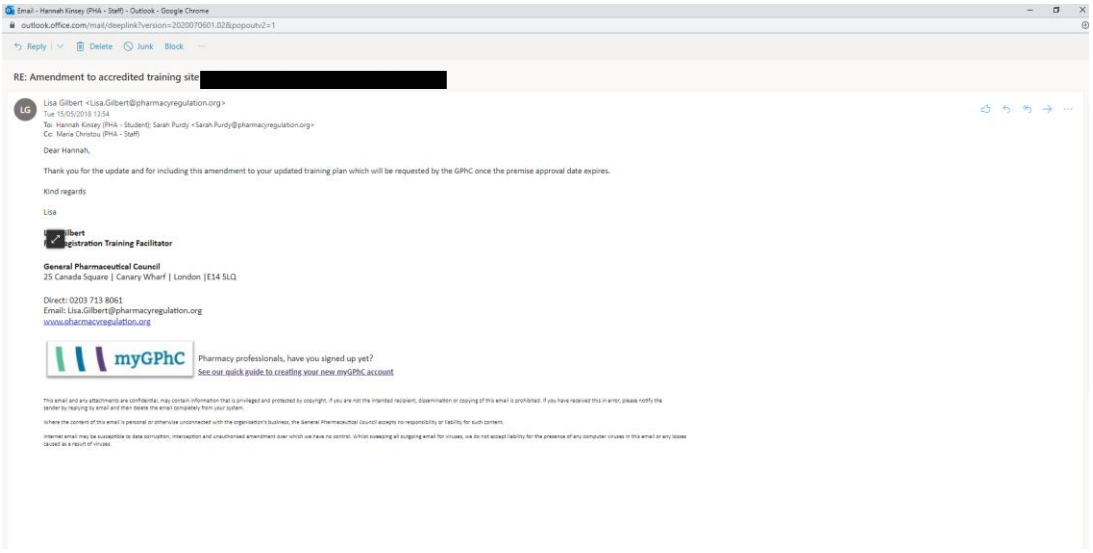
From: Hannah Kinsey (PHA - Student) [mailtoH.Kinsey@uea.ac.uk]
Sent: Wednesday, July 11, 2018 12:54
To: Sarah Purdy <Sarah.Purdy@pharmacyregulation.org>; Lisa Gilbert <Lisa.Gilbert@pharmacyregulation.org>
Cc: Maria Christou (PHA - Staff) <M.Christou@uea.ac.uk>
Subject: Amendment to accredited training pre-reg programme at [redacted]

Dear Sarah and Lisa,

My name is Hannah Kinsey and I would like to submit an amendment for the accredited training site [redacted]

Attached to this email is a covering letter explaining a bit more about the amendment and the application form itself.



Email - Hannah Kinsey (PHA - Staff) - Outlook - Google Chrome

outlook.office.com/mail/deeplink?version=2020070601.02&popoutv2=1

Reply | Delete Junk Block

RE: Amendment to accredited training site [redacted]

Lisa Gilbert <Lisa.Gilbert@pharmacyregulation.org>
Tue 15/05/2018 13:54
To: Hannah Kinsey (PHA - Student); Sarah Purdy <Sarah.Purdy@pharmacyregulation.org>
Cc: Maria Christou (PHA - Staff)

Dear Hannah,

Thank you for the update and for including this amendment to your updated training plan which will be requested by the GPhC once the premise approval date expires.

Kind regards

Lisa

[redacted]ilbert
[redacted]egistration Training Facilitator

General Pharmaceutical Council
25 Canada Square | Canary Wharf | London |E14 5LQ

Direct: 0203 713 8061
Email: Lisa.Gilbert@pharmacyregulation.org
www.pharmacyregulation.org

myGPhC Pharmacy professionals, have you signed up yet?
See our quick guide to creating your new myGPhC account

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Appendix 15 Key activities within the ward placement design – chapter 5

The key activities which were discussed at the advisory panel are described below.

Medicines Management activity	Hospital 1 agreement?	Hospital 2 agreement?	Potential Performance Standards Obtained
Assist ward staff with individual patient ordering of medicines	Yes	Yes	A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A4.1-A4.8 A5.1-A5.7 B1.1-B1.12 B2.1-B2.9 C1.9 C1.11-C1.12 C2.1-C2.9 C2.11
Completing Patient Own Drug checks and Medicines Reconciliation for patients	Yes	Yes	
Dealing with medication supply queries	Yes	Yes	
Assisting ward staff in achieving medicines management audit outcomes	Yes	Yes	
Support ward staff to monitor therapeutic drug levels for specified patients and drugs	Yes	Yes	
Update the patient whiteboard with TTO status	Yes	No - electronic board	

Patient observations	Hospital 1 agreement?	Hospital 2 agreement?	Potential Performance Standards Obtained
Assist ward staff with conducting patient observations	Yes	Yes	A1.1 – A1.8 A2.1–A2.4 A3.1 A4.1 A4.5 A5.1 – A5.7 B1.1-B1.12 B2.1 – B2.3 C1.11 C2.4 C2.11
Take responsibility for ensuring observations are taken at the appropriate intervals for a bay of patients	No	No	
Respond accordingly if a patient's observations result in them scoring a high NEWS score	No	No	

Board rounds	Hospital 1 agreement?	Hospital 2 agreement	Potential Performance Standards Obtained
Attend board round, making relevant notes regarding patient care	Yes	Yes	A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A4.6-A4.7 A5.1-A5.7 B1.1-B1.12 B2.1-B2.3 B2.5-B2.7 C2.1-C2.4 C2.11
Communicate relevant information regarding patients' medicines and discharge information to ward pharmacist	Yes	Yes	

Medicines administration	Hospital 1 agreement?	Hospital 2 agreement?	Potential Performance Standards Obtained
Attend administration rounds, making relevant notes regarding administering medication to patient group	Yes	Yes	A1.1-A1.8 A2.1-A2.4 A3.1-A3.5 A4.1-A4.2 A4.4-A4.7 A5.1-A5.7 B1.1-B1.12 B2.1-B2.6 B2.9 C1.2-C1.11 C2.1-C2.9 C2.11
Support crushing and dispersing of medicines to administer to patient	Yes	Yes	
Support preparation and administration of IV medication to patients	Yes	Yes	
Observe administration of Controlled Drugs	Yes	Yes	

Consultant ward rounds	Hospital 1 agreement?	Hospital 2 agreement?	Potential Performance Standards Obtained
Attend ward round, making relevant notes regarding patient care	Yes	Yes	A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A4.1-A4.8 A5.1-A5.7 B1.1-B1.12 B2.1-B2.6 C1.3-C1.5 C1.10 C2.1-C2.11
Communicate relevant patient information to ward pharmacist	Yes	Yes	
Observe healthcare professional-led patient consultations	Yes	Yes	
Witness multi-disciplinary team decision-making process	Yes	Yes	
Answering staff medication queries with support from tutor/ward pharmacist	Yes	Yes	

Guidelines implementation	Hospital 1 agreement?	Hospital 2 agreement?	Potential Performance Standards Obtained
Use current guidelines and reference sources to assess the suitability of current treatment regimes	Yes	Yes	A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A4.1-A4.2 A4.4 A4.6-A4.7 A5.1-A5.7 B1.1-B1.12 B2.1-B2.3 B2.5-B2.6 B2.9 C1.3-C1.5 C1.11 C2.1-C2.4 C2.7 C2.11
Review patients' clinical notes and refer to current treatment guidelines	Yes	Yes	
Work with team to implement safe use of trust guidelines in patient's treatment plan where appropriate	Yes	Yes	
Identify guidance which is not widely implemented and communicate this to ward team	Yes	Yes	

Patient-centred discharge planning	Hospital 1 agreement?	Hospital 2 agreement?	Potential Performance Standards Obtained
Review clinical discharge summaries	Yes (but not amending independently)	Yes	A1.1-A1.8 A2.1-2.4 A3.1-A3.5 A4.1-A4.2 A4.4-A4.8 A5.1-A5.7 B1.1-B1.12 B2.1-B2.9 C1.2-C1.5 C2.1-C2.9 C2.11
Discuss medicine discharge summaries with patients	Yes	Yes	
Communicate with the relevant primary care providers regarding patient's discharge e.g. community pharmacy	Yes	Yes	
Assist ward and pharmacy staff in proactive discharge medication preparation	Yes	Yes	
Attend Care Home visits and/or home visits with a healthcare professional	Yes	Yes	
Witness and support patients to manage their medicines at home	Yes	Yes	
Identify safeguarding issues and learn how to initiate appropriate actions	Yes	Yes	

During the advisory panel, participants suggested groups of key activities that were missing from this list which included:

- Working in the day assessment unit.
- Patient counselling
- Patient's self-administration of medicines
- Responding to medicines information queries
- 'Other' category of opportunistic activities that did not fit into one of the above activity groups.

Appendix 16 Responsibilities of the pre-registration pharmacists – chapter 5

Responsibility	Decision	Hospital 1 agreement?	Hospital 2 agreement?
Making beds	Not a routine expectation, but trainees could assist healthcare assistants if the ward is busy.	Yes	Yes
Washing patients	Trainees should be aware of how patients are washed but should not be actively involved in washing patients.	Yes	Yes
Walk patients to the toilet	Trainees should not escort patients to the toilet independently but should find a relevant member of staff to assist.	Yes	Yes
Talk to patients about medicines	Trainees should have holistic discussions with patients about their medicines that go beyond the medication history and discharge counselling.	Yes	Yes
Dispense urgent medicines	Trainees should assist the ward to facilitate urgent discharges which may include dispensing items in main pharmacy. These items should still be checked by a pharmacist.	Yes	Yes
Discharge planning	Trainees should assist with managing discharges, ensuring patients have enough medicines and liaising with the ward pharmacist.	Yes	Yes
Ensure patients have enough to drink/are eating	Trainees should not assist patients with food but can provide patients with drinks.	Yes	Yes
Mobilising patients and role if patients fall	Trainees should have an awareness of and should know who to call for in the event of a patient falling.	Yes	Yes
Take patient's blood	Trainees should be aware of how blood is ordered, taken, sent off. This should include acquiring knowledge of the different vials	Yes	Yes

	used, their colours and what these mean. Trainees should not be taking blood themselves		
Ordering controlled drugs for the ward	Ordering controlled drugs should remain the responsibility of qualified nursing staff.	Yes	Yes
Complete a final check on medicines dispensed	Final check of medicines dispensed should remain the responsibility of a qualified pharmacist.	Yes	Yes
Complete the final Clinical Screen of medication	Final clinical screen of medication should remain the responsibility of the qualified pharmacist.	Yes	Yes
Counsel patients on discharge about their medicines	Trainees should provide patients with information and an opportunity to ask questions about their medicines prior to their discharge. This is particularly important if changes have been made to the patient's regular medicines.	Yes	Yes
Managing the discharge updates on the patient board	Trainees should have an awareness of the planned discharges for patients on the ward and communicate this to ward staff via the patient board, taking care to keep it up to date and relevant.	Yes	No – electronic board
Manage Patient's own Controlled Drug Book	Trainees should monitor and assist ward staff in ensuring the Patient's own Controlled Drug book is kept up to date and entries in there tracked and recording is undertaken thoroughly.	Yes	Yes
Relabel medicines when doses have been changed	Trainees can relabel medicines where doses have been changed, the relabel should be final checked by a qualified pharmacist.	Yes	Yes
Second check TTO medicines	Trainees should assist the nurses with checking TTO medicines by acting as a second checker, only when they have not been involved in the dispensing of the items.	Yes	Yes
Answering patients' bell calls	Trainees should answer patient's bell calls. They should go to patient and ask what they need and be clear about how to	Yes	Yes

	escalate patient's needs safely and hand over responsibility to the next member of staff.		
Working with patients in isolation rooms	Trainees should continue to work with patients in isolation rooms, taking the normal precautions and procedures when working with these patients.	Yes	Yes
Administering medicines	Trainees may administer medicines under the supervision of a registered nurse (as student nurses do) but they should not be administering medicines independently.	Yes	Yes
Act as a third checker when checking giving IV medication	Trainees may act as a third checker for the administration for intravenous (IV) medications (as student nurses do).	Yes	Yes

Appendix 17 Ethical approval (service evaluation) – chapter 6

Faculty of Medicine and Health Sciences Research Ethics Committee

University of East Anglia

Hannah Kinsey
PHA

Research & Innovation Services
Floor 1, The Registry
University of East Anglia
Norwich Research Park
Norwich, NR4 7TJ

Email: fmh.ethics@uea.ac.uk

Web: www.uea.ac.uk/researchandenterprise

30/08/18

Dear Hannah,

Project Title: Evaluation of a ward-based placement for a pre-registration pharmacist at [redacted]
Reference: 2017/18 132

I have reviewed the submission of your above proposal and I can confirm that it is considered to be a Service Evaluation. There are no issues of confidentiality or harm to participants and I am happy to approve the study by light touch review.

Please could you ensure that any amendments to either the protocol or documents submitted are notified to us in advance and also that any adverse events which occur during your project are reported to the Committee. Please could you also arrange to send us a report once your project is completed.

I would like to wish you good luck with your project.

Yours sincerely,

Professor M Twigg
Deputy Chair
FMH Ethics Committee

Appendix 18 Local approval (service evaluation) at hospital 1 – chapter 6

[redacted]

FMH Ethics Committee
University of East Anglia
Norwich Research Park
Norwich
NR4 7TJ

27.7.18

Dear Sir/Madam,

I am writing to confirm that [redacted] would like to approve the Service Evaluation of a ward-based placement for a pre-registration pharmacist at [redacted]. The Trust considers this piece of work to be a service evaluation.

As Deputy Chief Pharmacist at [redacted], I have the authority to approve this as a service evaluation within the Trust.

If you require any further information, please don't hesitate to get in touch.

Yours faithfully,

[redacted]

Pre-registration pharmacist integrated ward-based placement

Developed in collaboration between [hospital 1] and the University of East Anglia

Pre-registration Pharmacist	
Education Supervisor	
Practice Supervisor	

Contents

1. Introduction

1.1 Learning Outcomes

This placement has a set of Learning Outcomes designed to complement the 76 Performance Standards pre-registration pharmacists need to achieve as part of their pre-registration year. The learning outcomes are as follows:

- Apply and synthesise knowledge in the context of clinical decision-making
- Critically appraise prescriptions and develop personalised management plans for patients
- Demonstrate effective time-management, prioritisation and organisational skills
- Demonstrate effective interprofessional working
- Demonstrate effective communication and consultation skills with patients, carers and healthcare professionals
- Evaluate their placement experience

1.2 Role and Responsibilities

Role of the pre-registration pharmacist:

- Work as a member of the ward team to provide patient care
- Engage in the activities on the ward to provide care to patients
- Use learning opportunities on the ward to enhance your knowledge and develop your skills

Responsibilities of the pre-registration pharmacist:

- Adhere to the GPhC Professional Standards
- Follow guidance and instruction from your Practice Supervisor
- Maintain regular contact with your Education Supervisor
- Effectively communicate with your supervisors
- Be responsible for your own learning
- Seek out opportunities to gather feedback on your performance using the tools provided in this handbook

How the pre-registration pharmacist will be supported

The pre-registration pharmacist will be supported by their Education Supervisor, Practice Supervisor and ward staff throughout this placement.

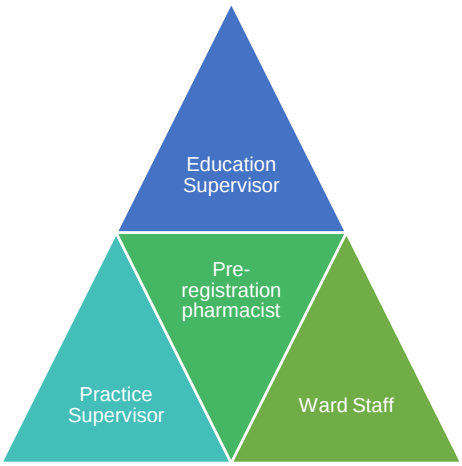
The Education Supervisor (pre-registration tutor) will remain responsible for overseeing the education and development of the pre-registration pharmacist throughout their placement. The Education Supervisor will have regular meetings with the pre-registration pharmacist, reviewing evidence collected and reviewing and updating the learning outcomes in accordance with the pre-registration pharmacists' progress.

The Practice Supervisor (ward sister) is responsible for overseeing day-to-day activities of the pre-registration pharmacist on the ward. The Practice Supervisor will facilitate opportunities on the ward for the pre-registration pharmacist to achieve their learning objectives and integrate into the ward team.

Ward staff will support the pre-registration pharmacist throughout their placement, enabling them to achieve their learning objectives and including them in different aspects of ward-based work, providing direct supervision where necessary.

1.3 Role Boundaries

This section provides a more comprehensive overview of the role expectations for the pre-registration pharmacist. This list is not prescriptive, if there are activities which arise during the course of the placement which are not listed here, the pre-registration pharmacist should consult with their Practice and Education supervisors to determine what is most appropriate.



The table below includes activities which the pre-registration pharmacist ***should not*** undertake:

Activity	Further information
Make beds	This activity should not be a routine expectation from the role, but pre-reg could help Healthcare Assistants with this when the ward is very busy.
Wash patients	The pre-reg should be aware of how patients are washed but they should not be actively involved and should not be washing patients.
Take patients' blood	The pre-reg should be aware of how blood is ordered, taken, sent off, but they should not be taking blood themselves. This should include acquiring knowledge of the different vials used, their colours and what these mean.
Ensure patients have enough to drink/are eating	Pre-reg should not assist with food. Pre-reg can assist with drinks and provide patients with drinks, but it is nursing responsibility to deal with patients who may have modified diets.
Walk patients to the toilet	The pre-reg should not escort or assist patients to the toilet. The pre-reg should find the relevant member of staff to assist with this activity.
Mobilising patients and role if patients fall	Pre-reg should have an awareness of and should know how to help in an assisted fall, but should not be attempting to move the patient in any way.
Order controlled drugs for the ward	Ordering controlled drugs should remain the responsibility of qualified nursing staff.
Complete a final check on medicines dispensed	Final check of medicines dispensed should remain the responsibility of a qualified pharmacist.
Complete the final Clinical Screen of medication	Final clinical screen of medication should remain the responsibility of the qualified pharmacist.

The table below includes information which the pre-registration pharmacist ***could*** undertake during their placement:

Activity	Further information
Talk to patients about their medicines	Pre-reg should have more holistic discussions with patients about their medicines that goes beyond the medication history and the discharge counselling.
Counsel patients on discharge about their medicines	Pre-reg should provide patients with information and an opportunity to ask questions about their medicines prior to their discharge. This is particularly important if changes have been made to the patient's regular medicines.
Manage the discharge (TTO) stickers on the patient board	The pre-reg should have an awareness of the planned discharges for patients on the ward and communicate this to ward staff via the patient board, taking care to keep it up to date and relevant.
Manage Patient's own Controlled Drug Book (SAM book)	Pre-reg to monitor and assist ward staff in ensuring the Patient's own Controlled Drug book is kept up to date and entries in there tracked and recording is undertaken thoroughly. The ward sister checks this every Wednesday – pre-reg to conduct this activity and ward sister to maintain overall responsibility for this being filled out correctly.
Dispense urgent medicines in pharmacy (still need to be checked by pharmacist)	Pre-reg should assist the ward to facilitate urgent discharges and this may include dispensing medicines in Main Pharmacy. These items dispensed should still be checked by a pharmacist. Note: If the pre-reg is working a long day (outside of pharmacy hours), it may be difficult to dispense and so pre-reg could assist by locating where an item may be stocked. But if urgent and not available elsewhere, the on-call pharmacist should be contacted.
Relabel medicines when doses have been changed	Pre-reg should relabel medicines where doses have been changed, the relabel should be final checked by a qualified pharmacist.
Second check TTO medicines	Pre-reg should assist the nurses with checking TTO medicines by acting as a second checker, only when they have not been involved in the dispensing of the items.
Answering patients' bell calls	Pre-reg should answer patient's bell calls. They should go to patient and ask what they need. The

	pre-reg should recognise what they can and cannot do. Pre-reg needs to be clear about how to escalate patient's needs safely and hand over responsibility to the next member of staff.
Working with patients in isolation rooms	Pre-reg should continue to work with patients in isolation rooms, taking the normal precautions and procedures when working with these patients.
Medicines Administration	Pre-reg may administer medicines under the supervision of a registered nurse. The pre-reg should not be administering medicines independently.
Act as a third check when checking giving IV medication	Currently nursing students act as a 3rd check for IV medication. Pre-reg to act as 3rd checker for preparing IV medication.
Act as a second check for Controlled Drugs checks	Pre-reg can act as a 2nd check for Controlled Drugs checks (pharmacy technicians can currently perform this role).

1.4 Personal Development Plan

Prior to the placement commencing, a personal development plan should be filled out to identify, prioritise and design ways in which the pre-registration pharmacists' educational needs may be met during their placement. This plan should reflect the commitment from the pre-registration pharmacist, Practice and Education Supervisors to meeting the learning needs of the trainee.

To help identify some of the learning objectives for this placement, please reflect on the learning outcomes listed above.

Personal Development Plan

Pre-registration pharmacist: …… Education Supervisor: …… Practice Supervisor:……

Date:

What do you want to learn? (Objectives)	How are you going to learn it? (Resources and Strategies)	How are you going to show that you have learnt it? (Evidence)	How are you going to prove you have learnt it? (Verification)	Who will determine if you have learnt it?	Target completion date

1.5 Technical Competency Assessments

Below is a list of technical competencies which once the pre-registration pharmacist has demonstrated proficiency in, may be able to perform independently. This list should be kept up to date by the pre-registration pharmacist to enable clear communication between ward and pharmacy staff regarding proficiency to perform specific tasks independently.

Competency assessment	Date completed	Reference to competency log (if applicable)
Medicines Reconciliation		
Medication ordering		
Discharge Letter Checking (EDS)		
Patient Observations		
Second checking TTO medicines		

The information below provides more information on the activities the pre-registration pharmacist could be undertaking during their placement.

Please be aware that the order, arrangement and specifics of the activities are not prescriptive and have been written and designed to provide guidance and structure to the placement. The activities are not compulsory and may be tailored to suit the learning needs of the pre-registration pharmacist.

2. Activity Timeline

Activity undertaken	*Prior to Placement*	*Week 1*	*Week 2*	*Week 3*	*Week 4*
Introductions to ward staff and development of learning plan	Learning agreement				
Pharmacy Activities; POD, MR, Ordering	Achieved competency	Conducts independently referring to ward pharmacist when necessary			
Discharge Planning	Achieved competency	Utilises Medicines Management skills to support ward pharmacist and nursing staff with patient discharges.			
Ward Induction		Induction			
Patient Observations		Training	Conduct observations independently		
Board rounds			Attendance and reporting to ward pharmacist		
Medicines administration			Observation at lunchtime rounds		Observe OM/PM round
Self-administration of Medicines Assessment			Observation and practice		
Patient Counselling			Practice patient counselling using evidence tools to support development		
Consultant ward round			Attendance and Observation; supporting medical team and communicating with ward pharmacist		
Responding to staff and patient Medicines information queries			Practice and implement responses under ward pharmacist supervision where applicable		
Guidelines implementation e.g. Antibiotic Stewardship	Familiarisation with relevant guidelines		Training and practice with ward pharmacist		Implementation
Work in the day assessment unit			Training from staff in day assessment unit		Perform pharmacist duties in the unit
Opportunistic					
Additional activities	Attend junior doctor training	Work long day	Work in ED	Patient handovers e.g. General all-purpose handover with medical and nursing staff	Work with specialist teams

Week 1

Meet the team		
Name	**Role**	**Responsibilities**

Week 1

Induction Activities		
Activity	**Completed (Date)**	**Notes/Link to Evidence**
Overview of how ward operates		
Orientation of the ward; location of ward items e.g. equipment, medicines		
Time spent with FY1; learning about their job roles		
Training on self-administration of patient's own medicines		
Conduct observations with HCAs		
Time spent in day assessment unit; learning how the unit operates		
Time spent with infection control		
Consultant ward round		
Team board round		

Notes:

Medicines management at ward level		
Activity	**Completed (Date)**	**Notes/Link to Evidence**
Assist ward staff with stock control; ordering medicines for patients and ward		
Assist ward and pharmacy staff in proactive discharge medication preparation		
Support clinical team in monitoring therapeutic drug levels for specified patients and drugs		

Notes:

Week 2

Attendance at Board Rounds		
Activity	**Completed (Date)**	**Notes/Link to Evidence**
Attend board round, making relevant notes regarding patient care		
Communicate relevant information regarding patients' medicines and discharge information to: 1. Ward pharmacist 2. Ward staff via handover sheets and whiteboard		

Notes:

Attendance at medication administration rounds		
Activity	**Completed (Date)**	**Notes/Link to Evidence**
Attend administration rounds, observing nursing staff administering medication to patients		
Support ward staff to administer medicines to patients with an NG tube		
Support ward staff to manage medicines administration of medicines to patients having Total Parenteral Nutrition		
Observe ward staff preparing and administering IV medication to patients		

Notes:

Week 2

Self-administration of medicines		
Activity	**Completed (Date)**	**Notes/Link to Evidence**
Conduct assessments to determine if patients suitable to self-administer medicines		
Support patients in self-managing their medicines during ward stay		

Notes:

Attendance at clinical ward rounds		
Activity	**Completed (Date)**	**Notes/Link to Evidence**
Attend ward round, making relevant notes regarding patient care		
Communicate relevant information on specific patients to ward pharmacist		
Observe healthcare professional-led patient consultations		
Witness history-taking sessions by other healthcare professionals		
Witness multi-disciplinary team decision-making process		
Consider the role of the pharmacist as a member of the multi-disciplinary team		

Notes:

During week 2 please try to complete the evidence tools:

- Mini-CEX
- Intervention Recording

Week 3

Patient Counselling and Treatment		
Activity	**Completed (Date)**	**Notes/Link to Evidence**
Be observed conducting patient-centred consultations: 1. With patients 2. With patients' relatives/carers		
Use the correct terminology and processes when contacting patients' relatives or care providers to ensure confidentiality is maintained		
Conduct supervised history-taking from patients		
Respond to patient medicine queries using an evidence-based approach		
Gather feedback from patients and staff on own counselling technique		
Identify areas for improvement when counselling patients		
Help to create a holistic clinical management plan for a patient which takes into consideration their physical, social and emotional needs		

Notes:

Week 3

Patient-centred care on discharge		
Activity	**Completed (Date)**	**Notes/Link to Evidence**
Review clinical discharge summaries		
Discuss medicine discharge summaries with patients		
Clarify questions patients may have regarding their individual discharge summary		
Communicate with the relevant primary care providers regarding patients' discharge medicines e.g. community pharmacy		
Support patients to manage their medicines at home e.g. checking they can remove their tablets from the packets		
Have an awareness of safeguarding issues and learn how to initiate appropriate actions		
Support patients to use aid devices to manage their medicines e.g. Haleraids		

Notes:

During week 3 please try to complete a Consultation Observation Tool

Week 4

Medicines Information		
Activity	**Completed (Date)**	**Notes/Link to Evidence**
Answer medicines information queries from ward staff using a variety of different resources		
Implement responses to queries under pharmacist supervision		
Contribute to improving patient care through accessing Medicines Information resources		
Communicate answers to Medicines Information queries clearly to the appropriate audience		

Notes:

Guidelines implementation		
Activity	**Completed (Date)**	**Notes/Link to Evidence**
Use current guidelines and reference sources to assess the suitability of current treatment regimes		
Review patients' clinical notes, referring to current treatment guidelines		
Work with team to implement safe use of trust guidelines in patients' treatment plans where appropriate		
Identify guidance which is not widely implemented and communicate this to ward team		

Notes:

Week 4

Working in the Day Assessment Unit		
Activity	**Completed (Date)**	**Notes/Link to Evidence**
Observe patient history-taking and decision-making with diagnosis		
Complete medication reconciliation for patients in the unit		
Liaise with clinical team to review patients' medicines		
Counsel patients on any medication changes		
Liaise with primary care providers regarding patient discharge		
Liaise with ward pharmacist regarding care plans for patients		
Under supervision, recommend interventions to patients' medicines		
Conduct history-taking from patients under supervision		

Notes:

During week 4 please try to complete a Case Based Discussion and distribute the mini-PAT

Other opportunities

Work shift hours		
Activity	**Completed (Date)**	**Notes/Link to Evidence**
Agree shift working hours		
Observe patient handover from night to day shift and vice versa		
Conduct supervised patient hand over from day to night shift		
Observe morning activities of ward staff		
Observe writing of late discharge prescriptions		
Evaluate ways in which the pharmacy department could implement to prevent late discharges		

Notes:

Other		
Activity	**Completed (Date)**	**Notes/Link to Evidence**
Attend a ‘no harm’ panel with Practice Supervisor		
Conduct antibiotic audit		
Learn about Fluid Balances		
Learn about Sliding scales		
Spend time with FY1 and/or nursing student teaching them about medicines		
Take part in a micro ward round		
Observe an iron infusion being calculated and subsequently administered		
Take advantage of opportunities on the ward to obtain knowledge and/or skills		
Conduct a teaching session/presentation with ward staff		
Attend training/teaching sessions with junior doctors		
Conduct a patient handover with		
Observe elderly care consultant ward round in ED		

Notes:

Please record any other activities which you undertook as part of your placement here:

Other		
Activity	**Completed (Date)**	**Notes/Link to Evidence**

3. Evidence Tools

3.1 Evidence Information

Please see the below suggested minimum timetable for collecting each of the following pieces of evidence. If time allows, please consider completing a Mini-CEX, intervention recording and Consultation tool weekly.

Evidence Tool	Week			
	1	2	3	4
Mini-Cex		✓		
Intervention Recording		✓		
Consultation Observation Tool			✓	
Case Based Discussion				✓
Mini-PAT				✓

The Tools are designed to be used with another member of staff who can provide feedback on the pre-registration pharmacists' performance which can be used to improve practice.

The tools have been designed with the GPhC Performance Standards in mind, to enable the pre-registration pharmacist to gather as much evidence in support of their activities during the placement. This will also allow the pre-registration pharmacist to demonstrate that they have met the minimum safe standard of practice by collecting evidence in support of meeting these standards.

The table below provides a brief overview of the details of each evidence tool.

Evidence Attribute	Consultation Observation Tool (COT)	Mini-Clinical Evaluation Exercise (Mini-CEX)	Intervention Recording (IR)	Case Based Discussion (CBD)	Mini Peer Assessment (Mini-PAT)
What does the tool support the development of?	Consultation skills Ability to initiate, participate and conclude a patient-centred consultation	Behaviour Judgement and reasoning in a range of clinical scenarios	Intervention Recommending, justifying and communicating interventions	In-depth discussion Depth and breadth of knowledge on a clinical area inspired by the management of a patient	Professionalism Building positive working relationships with the team
When to use?	Real-time	Real-time	Retrospectively	Retrospectively	Retrospectively
Preparation required?	No	No	Yes – 45 mins	Yes – 2 hours	No
Time taken	10-20 mins	10-20mins	15 mins	30-40 mins	10 mins
Who can use?	Any healthcare professional	Any healthcare professional	Preference for pharmacist/medic with knowledge in clinical area	Preference for pharmacist/medic with knowledge in clinical area	Any healthcare professional
Example of when tool could be used	Conducting medication history taking or discharge counselling with a patient	Discuss decision-making process and clinical reasoning in scenarios	When a clinical intervention has been made (or is being considered) by the pre-reg	To explore a complex patient and their care in greater depth in order to deepen understanding of disease/medicine	At end of placement to gather feedback from ward staff on performance and team-working
Other information	Feedback should be used to develop consultation skills further	More exercises completed for range of activities, better it is for informing further development	Snapshot recording of interventions made to improve patient care	Discussion that can be presented as a case study on a chosen patient to demonstrate learning and development	Questionnaire submitted to colleagues on ward at end of placement

Appendix 20 Participant information sheet – chapter 6 interview and focus group

Evaluation of a prototype placement

Principal Investigator: Hannah Kinsey, School of Pharmacy, University of East Anglia

01603 591973

h.kinsey@uea.ac.uk

This information sheet is provided to help you understand this project and what it will involve. It is set out as a series of questions and answers. If the question that you would like to ask is not provided then please feel free to contact Hannah Kinsey via telephone or email.

What is the project about?

The aim of this project is to design a ward-based placement for incorporation into the pharmacy pre-registration year at [redacted]

Why have I been chosen?

You have been invited to take part in this research because we value your thoughts and experiences from your involvement with a prototype placement on [redacted]

What does the project involve?

The project will involve a face-to-face interview or small focus group with the principal investigator, expected to last 1 – 2hours.

What are the benefits of becoming involved in this project?

The results of this project will be used to influence the content and design of a novel pre-registration pharmacist training programme at each of the above hospitals. Additionally, the preliminary findings from this project will be shared with you.

Will I be able to be identified from this advisory panel?

No, your identity will be anonymised in any publications or presentations based on this research project.

How will my information be stored?

Anonymised paperwork relating to this study will be stored securely where only the research team have access to.

Long-term data for this research will be stored in a secure room on a password protected computer at the University of East Anglia (UEA) for 10 years. All procedures for the handling, processing, storage and destruction of data are compliant with the Data Protection Act 1998.

What if I reveal sensitive information?

Due to the nature of the topic for discussion, it is unlikely that sensitive information will be revealed, however, all participants will be asked to refrain from mentioning sensitive information e.g. relating to patients, themselves, family members or colleagues. If sensitive information is revealed, the research team will later discuss if any further action needs to be taken.

Will I be compensated for taking part?
No

What if I choose not to participate?
Participation is entirely voluntary. If you would prefer to receive no further contact from the research team regarding this research, please email h.kinsey@uea.ac.uk and state that you do not wish to be contacted further regarding this research.

What happens next if I would like to participate?
If you would like to take part please email h.kinsey@uea.ac.uk and express your interest

Complaints
If you have a complaint about how you were approached or how the panel was conducted please contact Professor Mark Searcey (Head of the School of Pharmacy) at the University of East Anglia at m.searcey@uea.ac.uk. He will be able to answer any concerns you may have.

Appendix 21 Interview topic guide – chapter 6

Prior to Interview Starting	• Introduce self; name and role • Please note that any work you may have missed as a result of you being here, you will need to catch up on. • Today I am looking to discuss with you some of your experiences over the past 4 weeks • I would like to record the session so that I can focus on what you're saying without the need to make a lot of notes, though I may make a few notes if I need to. • It's important to remember when answering and discussing questions that there are no right or wrong answers, just be yourself and speak as honestly as possible. • Please refrain from talking about specific patients, or aspects of your working life which may not be appropriate in this setting. • Anything that is said within the interview will be treated confidentially, your responses will be stored in an anonymous format, and so your name will not appear in any report. • The interview is expected to last 1 -2 hours • Are there any questions before we begin? • Finally, please relax and enjoy the experience	Organise paperwork (consent forms and information sheets) Two Dictaphones Spare batteries Notebook Paper and pens for participants Organise refreshments
Switch on the recording device	• Icebreaker question: Would you be able to summarise your experience?	

Main Questions	Potential Probes
Tell me about the activities you undertook as part of the placement	Appropriateness of activities Timing of activities Scope/inclusion of activities Progression of responsibility with respect to activities Structure of activities Improvements
Tell me about how you structured your day/week	Involvement of supervisors Workbook Autonomy for own timetabling/learning needs Sitting lemon
Tell me about how you used the workbook (if you used it)	Content of workbook Structure of workbook Improvements to workbook Evidence tools; use of, quality of, appropriateness, guidance
Tell me about the supervision/support arrangements in place during the placement	Day to day oversight/supervision on the ward Tutor meetings Practice supervisor meetings Ward pharmacist/technician input Other healthcare professions involvement Improvement for support/supervision
Tell me about your interactions with ward staff	Welcomed Awareness of role and responsibilities Used Team integration Responding to queries Comfort zone Support
Tell me about your interactions with the pharmacy department during your placement	Dispensary Medicines Information Pharmacist availability
What improvements would you like to see being made to the placement overall?	

What advice can you give us about moving this forward to a 13 week placement for the pre-registration pharmacists coming through?	Preparations for pre-reg Preparations for ward staff Preparations for tutor/practice supervisor

Closing statements	**Potential probes**	**Notes**
Please take a moment to reflect on the discussions and identify what the most important topic talked about was to you.	Is there anything you feel we should have talked about and haven't?	

Appendix 22 Focus group topic guide – chapter 6

Prior to Focus Group Starting	• Introduce self; name and role • Please note that any work you may have missed as a result of you being here, you will need to catch up on. • Today I am looking to discuss with you some of your experiences of the ward placement over the past 4 weeks • I would like to record the session so that I can focus on what you're saying without the need to make a lot of notes, though I may make a few notes if I need to. • It's important to remember when answering and discussing questions that there are no right or wrong answers, just be yourself and speak as honestly as possible. • Please refrain from talking about specific patients, or aspects of your working life which may not be appropriate in this setting. • Anything that is said within the interview will be treated confidentially, your responses will be stored in an anonymous format, and so your name will not appear in any report. • The interview is expected to last 1 -2 hours • Are there any questions before we begin? • Finally, please relax and enjoy the experience	Organise paperwork (consent forms and information sheets) Two Dictaphones Spare batteries Notebook Paper and pens for participants Organise refreshments
Switch on the recording device	• Icebreaker question: Would you be able to summarise your experience of the placement? Would you be able to describe whether the placement met your expectations in terms of what it would involve?	

Main Questions	Potential Probes
Tell me about some of the activities conducted during the placement	Activities benefit staff/patients Activities benefit learning/development of pre-reg Safety of activities/competence Progression of responsibility re: activities – competence assessment Appropriateness Improvements
Tell me about how structure of daily work was determined	Appropriate Burden Dialogue Autonomy Responsibility Working hours
Tell me about the workbook	Use of workbook Content Structure Evidence tools; use of, quality of, appropriateness, guidance Improvement
Tell me about the supervision and support arrangements that took place during placement	Ward level supervision/support Meetings Pharmacy input Ward input Improvement Supervisor support (for themselves)
Tell me about the interactions between the ward staff and the pre-registration pharmacist	Welcomed Understanding of role/responsibilities Delegation of activities appropriate Used Team integration Responding to queries Comfort zone

	Support Benefits Disadvantages Improvement
What needs to be taken into consideration going forward to prepare the placement for the next set of pre-registration pharmacists?	Ward preparation Pre-reg preparation Supervisor preparation

Closing statements	**Potential probes**	**Notes**
Please take a moment to reflect on the discussions and identify what the most important topic talked about was to you.	Is there anything you feel we should have talked about and haven't?	

Appendix 23 Ethical approval – chapter 7

Faculty of Medicine and Health Sciences Research Ethics Committee

Hannah Kinsey
(PHA)

Research & Innovation Services
Floor 1, The Registry
University of East Anglia
Norwich Research Park
Norwich, NR4 7TJ

Email: fmh.ethics@uea.ac.uk

Web: www.uea.ac.uk/researchandenterprise

18 September 2018

Dear Hannah

Project Title: **Evaluation of a 13 week longitudinal ward placement for pre-registration hospital pharmacists**
Reference: **201819 - 003**

I have reviewed the submission of your above proposal and I can confirm that it is considered to be a Service Evaluation. There are no issues of confidentiality or harm to participants and I am happy to approve the study by light touch review.

Please could you ensure that any amendments to either the protocol or documents submitted are notified to us in advance and also that any adverse events which occur during your project are reported to the Committee. Please could you also arrange to send us a report once your project is completed.

Approval by the FMH Research Committee should not be taken as evidence that your study is compliant with GDPR and the Data Protection Act 2018. If you need guidance on how to make your study GDPR compliant, please contact your institution's Data Protection Officer.

I would like to wish you good luck with your project.

Yours sincerely

Professor M J Wilkinson
Chair
FMH Ethics Committee

Cc: David Wright
Maya Kumar (R203916)

Appendix 24 Health Research Authority Approval – chapter 7

Ymchwil Iechyd a Gofal Cymru
Health and Care Research Wales

NHS
Health Research Authority

Miss Hannah Kinsey
School of Pharmacy
University of East Anglia
Norwich
NR4 7TJ

Email: hra.approval@nhs.net
Research-permissions@wales.nhs.uk

16 October 2018

Dear Miss Kinsey

HRA and Health and Care Research Wales (HCRW) Approval Letter

Study title:	**Evaluation of a 13 week longitudinal ward placement for pre-registration (trainee) hospital pharmacists**
IRAS project ID:	**252608**
Protocol number:	**201819 - 003**
REC reference:	**19/HRA/0416**
Sponsor	**University of East Anglia**

I am pleased to confirm that **HRA and Health and Care Research Wales (HCRW) Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further relating to this application.

How should I continue to work with participating NHS organisations in England and Wales?
You should now provide a copy of this letter to all participating NHS organisations in England and Wales, as well as any documentation that has been updated as a result of the assessment.

Participating NHS organisations in England and Wales **will not** be required to formally confirm capacity and capability before you may commence research activity at site. As such, you may commence the research at each organisation 35 days following sponsor provision to the site of the local information pack, so long as:

- You have contacted participating NHS organisations (see below for details)
- The NHS organisation has not provided a reason as to why they cannot participate
- The NHS organisation has not requested additional time to confirm.

You may start the research prior to the above deadline if the site positively confirms that the research may proceed.

If not already done so, you should now provide the local information pack for your study to your participating NHS organisations. A current list of R&D contacts is accessible at the NHS RD Forum website and these contacts MUST be used for this purpose. After entering your IRAS ID you will be able to access a password protected document (password: **House45**). The password is updated on a monthly basis so please obtain the relevant contact information as soon as possible; please do not hesitate to contact me should you encounter any issues.

Commencing research activities at any NHS organisation before providing them with the full local information pack and allowing them the agreed duration to opt-out, or to request additional time (unless you have received from their R&D department notification that you may commence), is a breach of the terms of HRA and HCRW Approval. Further information is provided in the "*summary of assessment*" section towards the end of this document.

It is important that you involve both the research management function (e.g. R&D office) supporting each organisation and the local research team (where there is one) in setting up your study. Contact details of the research management function for each organisation can be accessed here.

How should I work with participating NHS/HSC organisations in Northern Ireland and Scotland?
HRA and HCRW Approval does not apply to NHS/HSC organisations within the devolved administrations of Northern Ireland and Scotland.

If you indicated in your IRAS form that you do have participating organisations in either of these devolved administrations, the final document set and the study wide governance report (including this letter) has been sent to the coordinating centre of each participating nation. You should work with the relevant national coordinating functions to ensure any nation specific checks are complete, and with each site so that they are able to give management permission for the study to begin.

Please see IRAS Help for information on working with NHS/HSC organisations in Northern Ireland and Scotland.

How should I work with participating non-NHS organisations?
HRA and HCRW Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to obtain local agreement in accordance with their procedures.

What are my notification responsibilities during the study?
The attached document *"After HRA Approval – guidance for sponsors and investigators"* gives detailed guidance on reporting expectations for studies with HRA and HCRW Approval, including:

- Registration of Research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics and is updated in the light of changes in reporting expectations or procedures.

I am a participating NHS organisation in England or Wales. What should I do once I receive this letter?
You should work with the applicant and sponsor to complete any outstanding arrangements so you are able to confirm capacity and capability in line with the information provided in this letter.

IRAS project ID	252608

The sponsor contact for this application is as follows:

Ms Maya Kumar
E-mail maya.kumar@uea.ac.uk
Telephone 01603592994

Who should I contact for further information?
Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is **252608**. Please quote this on all correspondence.

Yours sincerely

Catherine Adams
Senior Assessor

Email: hra.approval@nhs.net

Copy to: *Ms Maya Kumar, Sponsor's Representative*
[redacted]

Appendix 25 Longitudinal placement workbook – chapter 7

Pre-registration pharmacist integrated ward-based placement

Developed in collaboration between [hospitals 1 and 2] and the University of East Anglia

Pre-registration Pharmacist	
Education Supervisor	
Practice Supervisor	

Contents

3. Evidence Tools

- 3.1 Evidence Information
- 3.2 Mini-CEX
- 3.3 Intervention Recording
- 3.4 Consultation Observation Tool
- 3.5.1 Case Based Discussion Preparation
- 3.5.2 Case Based Discussion

Useful contact details

Person/Team	Useful for	Number
Ward Pharmacist	Patient-specific enquiries on and general medicines advice	
Pharmacy team	Additional pharmacy support and general medicine advice	
Medicines Information	Specific medicine/drug related enquiries that might be complex in nature	
Antibiotic Pharmacist	Antibiotic regime management of patients and general antibiotic advice	
Nurse Consultant	Additional source of clinical information and input (is an independent prescriber)	

1. Introduction

This workbook has been designed to be used by pre-registration pharmacists and staff members who are involved in the 13-week longitudinal placement.

The workbook contains an overview of the roles and responsibilities of the pre-registration pharmacists during their placement. Information has been included to support the development of personal learning objectives for the pre-registration pharmacist, which includes suggested learning outcomes for the placement.

Suggested activities have been included, please be aware that the order, arrangement and specifics of the activities are not prescriptive and have been written and designed to provide guidance and structure to the placement. The activities are not compulsory and may be tailored to suit the learning needs of the pre-registration pharmacist.

To support learning, a variety of 'Evidence Tools' (or workplace assessment tools)have been developed that could be used by the pre-registration pharmacists to gather evidence in support of them achieving the GPhC Performance Standards and also obtain feedback from a range of healthcare professionals that can be used to inform their further development. Use of these tools is not a compulsory.

Please be aware that any feedback on improvements to the 13-week placement and accompanying workbook would be important to inform further developments to this programme.

1.1 Role and Responsibilities

Role of the pre-registration pharmacist on this ward-based placement:

- Work as a member of the ward team to provide patient care
- Engage in the activities on the ward to provide care to patients
- Use learning opportunities on the ward to enhance your knowledge and develop your skills

Responsibilities of the pre-registration pharmacist on this ward-based placement:

- Adhere to the GPhC Professional Standards
- Follow guidance and instruction from your Practice Supervisor
- Maintain regular contact with your Education Supervisor
- Effectively communicate with your supervisors and ward staff throughout the placement
- Be responsible for your own learning

- Seek out opportunities to gather feedback on your performance using the tools provided in this handbook

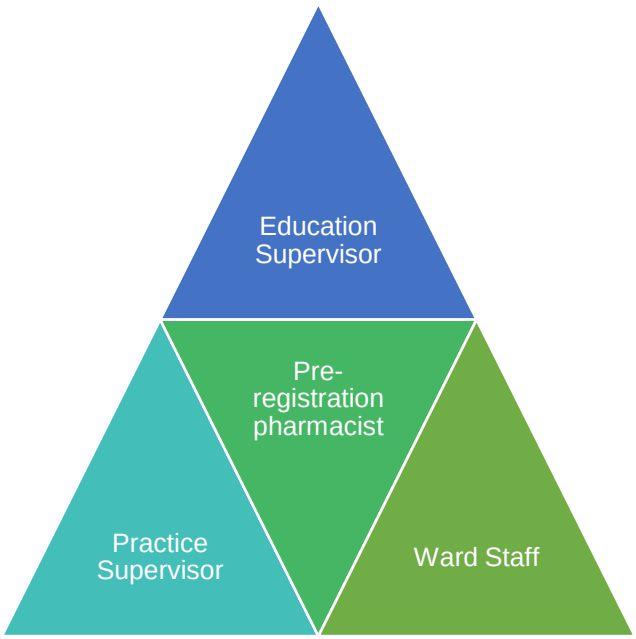
How the pre-registration pharmacist will be supported on this ward-based placement:

The pre-registration pharmacist will be supported by their Education Supervisor, Practice Supervisor and ward staff throughout this placement.

The Education Supervisor will remain responsible for overseeing the education and development of the pre-registration pharmacist throughout their placement. The Education Supervisor will have regular meetings with the pre-registration pharmacist, reviewing evidence collected and reviewing and updating the learning objectives in accordance with the pre-registration pharmacists' progress.

The Practice Supervisor is responsible for overseeing day-to-day activities of the pre-registration pharmacist on the ward. The Practice Supervisor will facilitate opportunities on the ward for the pre-registration pharmacist to achieve their learning objectives and integrate into the ward team.

Ward staff will support the pre-registration pharmacist throughout their placement, enabling them to achieve their learning objectives and including them in different aspects of ward-based work, providing direct supervision where necessary.



1.2 Role Boundaries

This section provides a more comprehensive overview of the role expectations for the pre-registration pharmacist. This list is not prescriptive, if there are activities which arise during the course of the placement which are not listed here, the pre-registration pharmacist should consult with their Practice and Education supervisors to determine what is most appropriate.

The table below includes information which the pre-registration pharmacist ***should not*** undertake:

Activity	Further information
Make beds	This activity should not be a routine expectation from the role, but pre-reg could help Healthcare Assistants with this when the ward is very busy.
Wash patients	The pre-reg should be aware of how patients are washed but they should not be actively involved and should not be washing patients.
Take patients' blood	The pre-reg should be aware of how blood is ordered, taken, sent off, but they should not be taking blood themselves. This should include acquiring knowledge of the different vials used, their colours and what these mean.
Ensure patients have enough to drink/are eating	Pre-reg should not assist with food. Pre-reg can assist with drinks and provide patients with drinks, but it is nursing responsibility to deal with patients who may have modified diets.
Walk patients to the toilet	The pre-reg should not escort or assist patients to the toilet. The pre-reg should find the relevant member of staff to assist with this activity.
Mobilising patients and role if patients fall	Pre-reg should have an awareness of and should know how to help in an assisted fall, but should not be attempting to move the patient in any way.
Order medicines for patients on the ward	All medication orders must still be screened and checked by a qualified pharmacist.
Order controlled drugs for the ward	Ordering controlled drugs should remain the responsibility of qualified nursing staff.
Complete a final check on medicines dispensed	Final check of medicines dispensed should remain the responsibility of a qualified pharmacist.
Complete the final Clinical Screen of medication	Final clinical screen of medication should remain the responsibility of the qualified pharmacist.

The table below includes activities which are not compulsory, but which the pre-registration pharmacist should undertake during their placement:

Activity	Further information
Talk to patients about their medicines	Pre-reg should have more holistic discussions with patients about their medicines that goes beyond the medication history and the discharge counselling.
Counsel patients on discharge about their medicines	Pre-reg should provide patients with information and an opportunity to ask questions about their medicines prior to their discharge. This is particularly important if changes have been made to the patient's regular medicines.
Manage the discharge (TTO) stickers on the patient board	The pre-reg should have an awareness of the planned discharges for patients on the ward and communicate this to ward staff via the patient board, taking care to keep it up to date and relevant.
Manage Patient's own Controlled Drug Book	Pre-reg to monitor and assist ward staff in ensuring the Patient's own Controlled Drug book is kept up to date and entries in there tracked and recording is undertaken thoroughly.
Dispense urgent medicines in pharmacy (still need to be checked by pharmacist)	Pre-reg should assist the ward to facilitate urgent discharges and this may include dispensing medicines in Main Pharmacy. These items dispensed should still be checked by a pharmacist. Note: If the pre-reg is working a long day (outside of pharmacy hours), it may be difficult to dispense and so pre-reg could assist by using the electronic system to find where an item may be stocked. But if urgent and not available elsewhere, the on call pharmacist should be contacted.
Relabel medicines when doses have been changed	Pre-reg should relabel medicines where doses have been changed, the relabel should be final checked by a qualified pharmacist.
Second check TTO medicines	Pre-reg should assist the nurses with checking TTO medicines by acting as a second checker. However, if the pre-reg has dispensed or created the letter for the TTO check, they should not be involved in this checking process as they should not be checking their own work.
Answering patients' bell calls	Pre-reg should answer patient's bell calls. They should go to patient and ask what they need. The pre-reg should recognise what they can and cannot do. Pre-reg needs to be clear about how to escalate patient's needs safely and hand over responsibility to the next member of staff.
Working with patients in isolation rooms	Pre-reg should continue to work with patients in isolation rooms, taking the normal precautions and procedures when working with these patients.

Medicines Administration	Pre-reg may administer medicines under the supervision of a registered nurse. The pre-reg should not be administering medicines independently.
Act as a third check when checking giving IV medication	Currently nursing students act as a 3rd check for IV medication. Pre-reg to act as 3rd checker for preparing IV medication at a point determined suitable by the Supervisory team.
Act as a second check for Controlled Drugs checks	Pre-reg can act as a 2nd check for Controlled Drugs checks (pharmacy technicians can currently perform this role) at a point determined suitable by the Supervisory team.

1.3 Personal Development Plan

Prior to the placement commencing, a personal development plan should be agreed to identify, prioritise and design ways in which the pre-registration pharmacists' educational needs may be met during their placement. This plan should reflect the commitment from the pre-registration pharmacist, Practice and Education Supervisors to meeting the learning needs of the trainee.

To help identify some of the learning objectives for this placement, please reflect on the learning outcomes listed below.

1.4 Learning Outcomes

This ward-based placement has a set of Learning Outcomes designed to complement the 76 Performance Standards pre-registration pharmacists need to achieve as part of their pre-registration year. At the end of this placement, you will be able to:

- Apply and synthesise knowledge in the context of clinical decision-making
- Critically appraise prescriptions and develop personalised management plans for patients
- Demonstrate effective time-management, prioritisation and organisational skills
- Demonstrate effective interprofessional working
- Demonstrate effective communication and consultation skills with patients, carers and healthcare professionals
- Reflect on the experience and identify future learning needs

Personal Development Plan

Pre-registration pharmacist: …… Education Supervisor …… Practice Supervisor……

Date:

What do you want to learn? (Objectives)	How are you going to learn it? (Resources and Strategies)	How are you going to show that you have learnt it? (Evidence)	How are you going to prove you have learnt it? (Verification)	Who will determine if you have learnt it?	Target completion date

1.5 Technical Competency Assessments

Below is a list of technical competencies which once the pre-registration pharmacist has demonstrated proficiency in, may be able to perform independently. This list should be kept up to date by the pre-registration pharmacist to enable clear communication between ward and pharmacy staff regarding proficiency to perform specific tasks independently.

Competency assessment	Date completed	Reference to competency log (if applicable)
Medicines Reconciliation		
Medication ordering		
Discharge Letter Checking		

1.6 Suggested typical working day

Below is an example of what a typical working day for a pre-registration pharmacist during the longitudinal placement could look like.

9am	Attend Board Round
9:30am	Attend Consultant ward round
11am*	Complete any outstanding Medicines Reconciliations if possible
	Respond to requests for medication orders (ready to be screened by pharmacist)
	Have queries ready for discussion with the ward pharmacist
1pm	Lunch
2pm	Support any discharges that may be taking place
	Respond to requests for medication orders
	Liaise with pharmacy team for updates and tasks and current ward status
	Check in with Practice Supervisor for tasks and help with prioritising tasks
	Review medicine charts, identifying patients which may be interesting to discuss
	Complete Audit activities
	Complete any Evidence Tools
	Seek out other learning opportunities which may be available
5pm	Finish work

Please be aware that this placement will see a gradual progression in terms of complexity and responsibility, so the pre-registration pharmacist may not be able to complete all tasks assigned at the start of the placement, it is expected that they will evolve over time.

*Don’t worry about finishing everything before going to lunch

1.7 Top tips on integrating into the ward team

1) Get to know the ward team and discharge coordinator.

2) Understand the roles of each staff member (this allows you to know who to approach when you have a question).

3) Present information about your working activities to your Practice Supervisor at all times so that they know that you are working on.

4) Make good use of time, be practical and seek Practice Supervisor out and ask if there is anything you should/could be doing.

5) Communicate with Practice and Education Supervisors about activities.

6) Try and stay on top of the ward list, who is on the ward and who is likely to be going home soon.

7) Keep a list of patients with queries or extra complications that you can forward to the ward pharmacist. Write things down that might be relevant to the ward pharmacist.

8) If you suspect a patient may not be managing their medicines, speak to staff nurse and Practice Supervisor first, liaising between the ward staff and the ward pharmacist.

9) When healthcare professionals visit the ward to review specific patients, introduce yourself as a pharmacy student and ask to observe/learn from them and ask them to explain what they are doing.

2. Activity Timeline

Activity undertaken	*Prior to Placement*	**Induction**	*Week 2-3*	*Week 4-5*	*Week 6-7*	*Week 8-9*	*Week 10-11*	*Week 12-13*
Learning agreement	Develop plan			Review plan			Review plan	
Pharmacy Activities; POD, MR, Ordering		Work towards achieving competencies			Conducts independently referring to ward pharmacist when necessary			
Discharge Planning			Utilises Medicines Management skills and works with pharmacist to support staff with patient discharges			Practice discharge letter proofing		Competency for discharge letters
Patient Observations			Observe observations by ward staff					
Pharmaceutical care planning			Training and practice		Implementation to support ward pharmacist			
Board rounds			Attendance and Observation, updates patient list			Contributes if appropriate		
Medicines administration			Observation of oral medicines administration		Observation of IV medicines administration		Support administration & attendance at morning administration round	
Self-administration of Medicines Assessment			Observation and practice with pharmacist			Conducts assessments independently; liaising with primary care providers on discharge		
Patient Counselling			Orientation from ward pharmacist where pre-reg will receive training and opportunity to practise			Completion of evidence tools to support development of consultation skills		
Consultant ward round			Attendance and Observation; supporting medical team and communicating with pharmacist					
Responding to staff and patient MI queries			Practice and implement responses under ward pharmacist supervision; completing Evidence Tools to support learning					
Guidelines implementation e.g. Antibiotic Stewardship			Familiarisation with relevant guidelines		Training and practice		Implementation with support from ward pharmacist	
Work in the day assessment unit				Observation and Training		Work under supervision of healthcare professional to assist with caring for patients		
Audit			Identification of audit topic		Audit data collection		Write-up	Presentation

Week 1 Induction

The pre-registration pharmacist should complete the table below when they meet staff on the ward.

Meet the team		
Name	**Role**	**Responsibilities**

Week 1 Induction

Induction Activities		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Overview of how ward operates		
Orientation of the ward; location of ward items e.g. equipment, medicines		
Time spent with FY1; learning about their job roles		
Understand transfer of care issues		
Time spent with infection control		
Time spent with physiotherapy		
Attend board round meetings		
Orientation of medical notes		
Training on answering the ward telephone		
Training on accessing patient's records e.g. pathology results		

Notes:

Week 2 - 3

Attendance at Board Rounds		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Attend board round, making relevant notes regarding patient care		
Communicate relevant information regarding patients' medicines and discharge information to: • Ward pharmacist • Ward staff via handover sheets and whiteboard		
Support ward staff to keep the patient whiteboard updated to reflect: • Discharge information • TTO status • (Any other relevant information)		

Attendance at medication administration rounds		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Attend administration rounds, observing nursing staff administering medication to patients		

Audit		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Liaise with Practice and Education supervisors to identify a suitable audit topic		

Observations		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Observe how nurses and healthcare assistants conduct patient observations		

Notes:

Week 4 -5

Attendance at clinical ward rounds		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Attend ward round, making relevant notes regarding patient care		
Communicate relevant information on specific patients to ward pharmacist		

Audit		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Agree audit topic		
Undertake audit topic literature search		

Medicines Information		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Collect Medicines Information queries from ward staff		
Draft responses to queries using an evidence-based response utilising different sources		
Go through responses with a qualified pharmacist and implement responses under supervision		

Medicines management at ward level		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Assist ward staff with stock control		
Take a proactive role in helping facilitate the ordering of medicines for the ward and for patients		
Review of medication stocked on the ward		

Patient Counselling and Treatment		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Work with ward pharmacist to identify patients appropriate for counselling		
Discuss approaches to take/technique when counselling patients		
Counsel patients on their discharge medicines under supervision from a pharmacist		

Notes:

Week 6 -7

Attendance at clinical ward rounds		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Observe healthcare professional-led patient consultations		
Witness history-taking sessions by other healthcare professionals		
Witness multi-disciplinary team decision-making process		

Attendance at medication administration rounds		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Support ward staff to administer medicines to patients with an NG tube		
Support ward staff to manage medicines administration of medicines to patients having Total Parenteral Nutrition		

Audit		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Define audit standards		
Pilot data collection tool		
Collect audit data		

Medicines management at ward level		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Support clinical team in monitoring therapeutic drug levels for specified patients and drugs		

Patient Counselling and Treatment		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Be observed conducting patient-centred consultations: 3. With patients 4. With patients' relatives/carers		
Gather feedback from staff on own counselling technique		
Identify areas for improvement when counselling patients		

Notes:

Week 8 -9

Audit		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Analyse data		
Agree recommendations with supervisors		
Write audit report		

Attendance at medication administration rounds		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Observe ward staff preparing and administering IV medication to patients		

Guidelines implementation		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Use current guidelines and reference sources to assess the suitability of current treatment regimes		
Review patients' clinical notes, referring to current treatment guidelines		

Medicines Information		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Answer medicines information queries from ward staff using a variety of different resources		
Implement responses to queries under pharmacist supervision		

Self-administration of medicines		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Conduct assessments to determine if patients suitable to self-administer medicines		
Support patients in self-managing their medicines during ward stay		

Patient-centred care on discharge		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Review clinical discharge summaries		
Discuss medicine discharge summaries with patients		
Clarify questions patients may have regarding their individual discharge summary		

Patient Counselling and Treatment		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Use the correct terminology and processes when contacting patients' relatives or care providers to ensure confidentiality is maintained		
Respond to patient medicine queries using an evidence-based approach		
Help to create a holistic clinical management plan for a patient which takes into consideration their physical, social and emotional needs		

Notes:

Week 10 - 11

Attendance at clinical ward rounds		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Consider the role of the pharmacist as a member of the multi-disciplinary team		

Audit		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Prepare a summary presentation of audit findings		

Guidelines implementation		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Work with team to implement safe use of trust guidelines in patients' treatment plans where appropriate		
Identify guidance which is not widely implemented and communicate this to ward team		

Medicines Information		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Contribute to improving patient care through accessing Medicines Information resources		
Communicate answers to Medicines Information queries clearly to the appropriate audience		

Patient-centred care on discharge		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Communicate with the relevant primary care providers regarding patients' discharge medicines e.g. Community pharmacy		
Support patients to manage their medicines at home e.g. checking they can remove their tablets from the packets		
Have an awareness of safeguarding issues and learn how to initiate appropriate actions		
Support patients to use aid devices to manage their medicines e.g. Haleraids		

Teaching session		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Agree a topic and audience		
Devise an evaluation form for attendees and a presenter feedback form		

Working in day assessment unit		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Observe patient history-taking and decision-making with diagnosis		
Complete medication reconciliation for patients in frailty unit		
Liaise with clinical team to review patients' medicines		
Counsel patients on any medication changes		

Notes:

Week 12 – 13

Audit		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Presentation of audit findings		
Implement recommendations as appropriate		

Patient-centred care on discharge		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Undertake competency assessment in EDS checking (if not yet achieved)		

Teaching session		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Deliver teaching session to ward staff/pharmacy staff		
Gather feedback on teaching sessions		

Work shift hours		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Agree working hours		
Observe patient handover from night to day shift and vice versa		
Observe morning activities of ward staff		
Observe writing of late discharge prescriptions		
Evaluate ways which the pharmacy department could implement to prevent late discharges		

Notes:

Working in day assessment unit		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Liaise with primary care providers regarding patient discharge		
Liaise with ward pharmacist regarding care plans for patients		
Under supervision, recommend interventions to patients' medicines		
Conduct history-taking from patients under supervision		

Other opportunities

Other		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**
Attend a ‘no harm’ panel with Practice Supervisor		
Conduct antibiotic audit		
Learn about Fluid Balances		
Learn about Sliding scales		
Spend time with FY1 and/or nursing student teaching them about medicines		
Take part in a micro ward round		
Observe an iron infusion being calculated and subsequently administered		
Take advantage of opportunities on the ward to obtain knowledge and/or skills		
Attend training/teaching sessions with junior doctors		
Conduct a patient handover with		
Observe consultant ward round in the emergency department		

Notes:

Other activities

Please record any other activities which you undertook as part of your placement here:

Other		
Activity	**Undertaken (Date)**	**Notes/Link to Evidence**

3. Evidence Tools

3.1 Evidence Information

Please see the below suggested minimum timetable for collecting each of the following pieces of evidence. The Tools are designed to be used with another member of staff who can provide feedback on the pre-registration pharmacists' performance which can be used to improve practice.

The tools have been designed with the GPhC Performance Standards in mind, to enable the pre-registration pharmacist to gather as much evidence in support of their activities during the placement. This will also allow the pre-registration pharmacist to demonstrate that they have met the minimum safe standard of practice by collecting evidence in support of meeting these standards.

The table below provides a brief overview of the details of each evidence tool.

Evidence Tools	**Week**												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Mini-CEX		✓	✓		✓	✓		✓	✓	✓	✓		
Intervention Recording			✓					✓				✓	
Consultation Observation Tool					✓				✓			✓	
Case Based Discussion				✓			✓				✓		
Mini-PAT													✓

Evidence Attribute	Mini-Clinical Evaluation Exercise (Mini-CEX)	Consultation Observation Tool (COT)	Intervention Recording (IR)	Case Based Discussion (CBD)	Mini Peer Assessment (Mini-PAT)
What does the tool support the development of?	Behaviour Judgement and reasoning in a range of clinical scenarios	Consultation skills Ability to initiate, participate and conclude a patient-centred consultation	Intervention Recommending, justifying and communicating interventions	In-depth discussion Depth and breadth of knowledge on a clinical area inspired by the management of a patient	Professionalism Building positive working relationships with the team
When to use?	Real-time	Real-time	Retrospectively	Retrospectively	Retrospectively
Preparation required?	No	No	Yes – 45 mins	Yes – 2 hours	No
Time taken	5-15 mins	10-20 mins	15 mins	30-40 mins	10 mins
Who can complete tool with pre-reg?	Any healthcare professional	Any healthcare professional	Any healthcare professional with knowledge in clinical area	Any healthcare professional with knowledge in clinical area	Any healthcare professional
Example of when tool could be used	Discussion of clinical reasoning decisions in real-life scenarios Clinical screening of a prescription • Formulating management plans for patients	Any opportunity where a consultation has taken place • Discharge medication counselling with patients • Responding to MI queries	When a clinical intervention is being considered by the pre-reg • Medicines reconciliation - intervention picked up as a result Attendance at consultant ward round – discussions with ward pharmacist afterwards may involve suggesting intervention	To explore a complex patient and their care in greater depth in order to deepen understanding of disease/medicine • Complex medication regime reduced (deprescribing) Complex medicines reconciliation process • Complex medical condition with specific medication regime	At end of placement to gather feedback from ward staff on performance and team-working
Other information	More exercises completed for range of activities, better it is for informing further development	Feedback should be used to develop consultation skills further	Snapshot recording of interventions made to improve patient care	Discussion that can be presented as a case study on a chosen patient to demonstrate learning and development	Questionnaire submitted to colleagues on ward at end of placement

3.2 Mini-CEX

Name …… Observer name ……

Date …….. Observer job role…..……

Case summary (to be filled out by pre-registration pharmacist)	
Anything especially good? (to be filled out by observer)	**Suggestions for development** (to be filled out by observer)
Agreed action (to be filled out by pre-registration pharmacist as SMART objectives):	

Please mark in the box whether the trainee pharmacist has met each of the below standards. Please leave the box blank if you have not observed this standard.	**Standard met? (✓)**
Behaviour	
A1.1 Behave in a manner consistent with membership of the profession	
B1.8 Behave in a manner which instills confidence	
B1.9 Behave assertively	
A1.4 Respond with willingness and flexibility to new situations and to change	
Problem Solving	
A3.1 Recognise and define actual or potential problems	
C2.7 Recognise possible adverse drug reactions, evaluate risks and take action accordingly	
A1.6 Make decisions which demonstrate clear and logical thought	
A3.2 Identify workable options to resolve the problem	
A3.3 Select the best solution, based on sound analysis and appropriate evidence	
A3.4 Suggest and, if appropriate, implement solutions to problems	
Communication	
B1.11 Provide information and advice appropriate to the needs of the recipient(s)	
B2.2 Present your own ideas and opinions appropriately when speaking and in writing	
Other observed Performance Standards (insert as appropriate)	

Reflection (to be filled out by pre-registration pharmacist)**:**

3.3 Intervention Recording

Name …… **Reviewer name……**

Date …….. **Reviewer job role……**

Intervention summary (context of intervention, pre-registration pharmacist involvement, justification for decisions made and patient outcome – to be filled out by pre-registration pharmacist):	
Anything especially good? (to be filled out by observer)	**Suggestions for development** (to be filled out by observer)
Agreed action (to be filled out by pre-registration pharmacist as SMART objectives):	

Please mark in the box whether the trainee pharmacist has met each of the below standards. Please leave the box blank if you have not observed this standard.	**Standard met? (✓)**
Problem solving	
A3.1 Recognise and define actual or potential problems	
C2.7 Recognise possible adverse drug reactions, evaluate risks and take action accordingly	
A3.2 Identify workable options to resolve the problem	
A1.6 Make decisions which demonstrate clear and logical thought	
A3.3 Select the best solution, based on sound analysis and appropriate evidence	
A3.4 Suggest and, if appropriate, implement solutions to problems	
A3.5 Evaluate the outcome of the solution after implementation, and if necessary re-define the problem	
Behaviour	
B1.11 Provide information and advice appropriate to the needs of the recipient(s)	
B2.1 Acknowledge the ideas and opinions of others and act on them when appropriate	
C2.4 Actively provide information and advice to healthcare professionals	
C2.2 Pro-actively assist patients to obtain maximum benefit from their treatment	
C2.3 Identify and take action to minimise risk to patients from their treatment	
Other observed Performance Standards (insert as appropriate)	

Reflection for pre-registration pharmacist:

3.4 Consultation Observation Tool

Name …… Observer name…….

Date …….. Observer job role…….

<table>
<tr><td colspan="2">Summary (to be filled out by pre-registration pharmacist):</td></tr>
<tr><td>Anything especially good?
(to be filled out by observer)</td><td>Suggestions for development
(to be filled out by observer)</td></tr>
<tr><td colspan="2">Agreed action (to be filled out by pre-registration pharmacist as SMART objectives):</td></tr>
</table>

Please mark in the box whether the trainee pharmacist has met each of the below standards. Please leave the box blank if you have not observed this standard.	**Standard met? (✓)**
Empathy and negotiation	
B1.5 Listen effectively to the whole message	
B1.4 Elicit all relevant information by the use of appropriate questions	
A1.5 Remain composed and personally effective in all situations	
B1.10 Use appropriate body language	
B1.7 Act appropriately in response to spoken and unspoken needs of others	
B2.1 Acknowledge the ideas and opinions of others and act on them when appropriate	
B1.2 Behave in a polite and helpful manner	
Influencing	
B1.11 Provide information and advice appropriate to the needs of the recipient(s)	
C2.1 Provide considered and correct answers to queries, founded on research-based evidence	
B2.9 Use your knowledge and skills effectively when helping others learn	
Safety-netting	
C2.2 Pro-actively assist patients to obtain maximum benefit from their treatment	
C2.3 Identify and take action to minimise risk to patients from their treatment	
A1.3 Recognise your personal and professional limitations and refer appropriately	
Other observed Performance Standards (insert as appropriate)	

Reflection (to be filled out by pre-registration pharmacist):

3.5.1 Case Based Discussion Preparation

Name …… Observer name…..……

Date …….. Observer job role ……

Case Summary (explanation of patient's journey through from their diagnosis and treatment of their condition; highlighting your involvement in patient's care):

Hospital Number	
Gender	
Age	
Allergies	
Other relevant patient demographics e.g. weight	
Medical History	
Drug History	
Social History	
Presenting Complaint including signs and symptoms	
Diagnosis	
Key investigations undertaken	
Key investigation results	

Changes to drug therapy
Interventions made by pre-registration pharmacist (if applicable)
Follow-up plan for patient (including monitoring requirements)
Patient Counselling points (including lifestyle changes and signposting)
Other relevant information relating to case:

3.5.2 Case Based Discussion

Name ……. Reviewer name……..……

Date …….. Reviewer job role……

Anything especially good? (to be filled out by reviewer)	**Suggestions for development** (to be filled out by reviewer):
Agreed action (to be filled out by pre-registration pharmacist as SMART objectives):	

Please mark in the box whether the trainee pharmacist has met each of the below standards. Please leave the box blank if you have not observed this standard.	**Standard met? (✓)**
Use of resources and problem solving	
A2.4 Use resources effectively	
A3.1 Recognise and define actual or potential problems	
A3.5 Evaluate the outcome of the solution after implementation	
A4.6 Base your actions, advice and decisions on evidence	
Learning opportunities	
A5.3 Make full use of learning and development opportunities	
A5.6 Record your own learning and development process and outcomes	
A5.7 Apply learning to practice	

Please mark in the box whether the trainee pharmacist has met each of the below standards. Please leave the box blank if you have not observed this standard.	**Standard met? (✓)**
B2.2 Present your own ideas and opinions appropriately when speaking and in writing	
Patient care	
C2.5 Construct medication histories using a range of sources	
C2.6 Use medication histories correctly	
C2.3 Identify and take action to minimise risk to patients from their treatment	
C2.2 Pro-actively assist patients to obtain maximum benefit from their treatment	
Other observed Performance Standards (insert as appropriate)	

Reflection (to be filled out by pre-registration pharmacist):

Appendix 26 Participant information sheet for pre-registration pharmacists – chapter 7

Interviewee Participant Information Sheet for pre-registration pharmacists

Evaluation of a longitudinal ward placement for pre-registration hospital pharmacists

Participant Information Sheet

We would like to invite you to take part in a research study. This study is being run and sponsored by the University of East Anglia. Before you decide whether you would like to participate, we would like you to understand why the research is being done and what it would involve for you.

What is the project about?

The aim of this project is to evaluate the design and implementation of a 13 week longitudinal ward placement for pre-registration pharmacists at [redacted]. In order to capture this information, interviews will be conducted to enable opinions and views to be sought from pre-registration pharmacists, pre-registration pharmacist tutors and ward staff involved in the placement. The findings of this study will be formally presented as a part of doctoral thesis, in publications to peer reviewed journals and at conferences.

Why have I been invited?

You have been invited to take part in this research because of your involvement with the 13 week longitudinal placement.

Do I have to take part?

You are not obliged to participate. It is up to you to decide to join the study which involves five face-to-face interviews. If you agree to take part then we will ask you to sign a consent form. You are however free to withdraw from the study at any time, without giving a reason. If you would prefer to receive no further

contact from the research team regarding this research, please email Hannah Kinsey at h.kinsey@uea.ac.uk and state that you do not wish to be contacted further regarding this research.

What will happen to me if I take part?

Please note that participation in this study will not have any effect on your role. We will ask all participants to sign a consent form to indicate if they agree to participate. We are asking you to take part in five face-to-face interviews with the chief investigator. The interviews will take place:

- 1 – 2 weeks prior to placement commencing
- Week 4 of placement
- Week 8 of placement
- Immediately after placement finished (week 14)
- Month 1 – 2 post registration as a pharmacist

The interviews will be held in a suitable room and is expected to last between 20 and 90 minutes during working hours. Refreshments will be provided.

What will we ask you about?

You will not be asked to talk about anything that you do not wish to talk about. However, if for any reason you do not feel comfortable at any point during the interview, you are free to stop without giving a reason.

What will happen to my interview data?

The interview will be recorded on a voice recorder to enable an accurate recording of your thoughts and experience. Only the chief investigator will listen to the recordings in addition to an independent transcriber who will have access to participants' names, roles and audio files in order to transcribe the data. The recording will be transcribed so that we have a written record for the study to enable evaluation. The independent transcriber will sign a confidentiality agreement. Your name and other individual characteristics will be changed in the transcription so that the participants such as yourself will not be identifiable in any way in this study or subsequent reports.

What are the possible benefits of becoming involved in this project?

The results of this project will be used to influence pre-registration pharmacist training in the future at your hospital and possibly at other institutions as well. Additionally, the preliminary findings from this project will be shared with you.

What are the possible disadvantages of becoming involved in this project?

We do not think there are any disadvantages of taking part in this study, apart from the time taken to participate.

Will I be able to be identified from this interview?

Everything you tell us will stay confidential; we will not tell your employer or anyone else what you personally say. Your identity will be anonymised in the transcript and in any publications or presentations based on this research project.

What if I reveal sensitive information during the interview?

Due to the nature of the topic for discussion, it is unlikely that sensitive information will be revealed, however, you will be asked to refrain from mentioning sensitive information e.g. relating to patients, yourselves, family members or colleagues. If sensitive information is revealed, this will be discussed with you and any potential action reviewed with the research management team.

How will my data be stored?

The electronic anonymised transcript will be stored on a password protected computer. Anonymised paperwork relating to this study will be stored securely in the School of Pharmacy at the University of East Anglia.

Long-term data for this research will be stored in a secure room on a password protected computer at the University of East Anglia (UEA) for 10 years and disposed of in accordance with UEA's data management protocol. All procedures for the handling, processing, storage and destruction of data are compliant with the Data Protection Act 2018.

What if I decide during the interview I do not want to continue?

You can withdraw your consent before or during the interview.

Will I be compensated for taking part?

No, but your hospital will be paid for your time, enabling you to take time out of your working day to be interviewed.

Travel Expenses

If you have had to travel specifically for the interview, travel expenses can be reimbursed – please contact Hannah Kinsey regarding this.

What happens next if I would like to participate?

If you would like to be interviewed, please email h.kinsey@uea.ac.uk, stating that you would like to participate in an interview. From there, a suitable date, time and venue will be arranged.

What if there's a problem?

If you have any concerns about the study, you should raise them directly with Hannah Kinsey.

Who has reviewed the study?

The study has been approved by Faculty of Medicine and Health Sciences Research Ethics Committee, University of East Anglia.

Further information and contact details

If you would like further information please contact the chief investigator Hannah Kinsey, School of Pharmacy, UEA (h.kinsey@uea.ac.uk / 01603 591973).

What if you have any concerns or complaints regarding this study?

If you have a complaint about how you were approached or how the interview was conducted please contact Professor Mark Searcey (Head of the School of Pharmacy) at the University of East Anglia at m.searcey@uea.ac.uk. He will be able to answer any concerns you may have.

GDPR transparency statement

The University of East Anglia is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. The University of East Anglia will keep identifiable information about you for 10 years after the study has finished.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible.

You can find out more about how we use your information by contacting the University of East Anglia.

As a University, we use personally-identifiable information to conduct research to improve health, care and services. As a publicly-funded organisation, we have to ensure that it is in the public interest when we use personally-identifiable information from people who have agreed to take part in research. This means that when you agree to take part in a research study, we will use your data in the ways needed to conduct and analyse the research study. Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible.

Health and care research should serve the public interest, which means that we have to demonstrate that our research serves the interests of society as a whole. We do this by following the UK Policy Framework for Health and Social Care Research.

If you wish to raise a complaint on how we have handled your personal data, you can contact our Data Protection Officer who will investigate the matter. If you are not satisfied with our response or believe we are processing your personal data in a way that is not lawful you can complain to the Information Commissioner's Office (ICO).

Our Data Protection Officer is Ellen Paterson and you can contact them at dataprotection@uea.ac.uk

The University of East Anglia will use your name and contact details to contact you about the research study, and make sure that relevant information about the study is recorded for your care, and to oversee the quality of the study. Individuals from the University of East Anglia and regulatory organisations may look at your research records to check the accuracy of the research study [redacted] will pass these details to the University of East Anglia along with the information collected from you. The only people in the University of East Anglia who will have access to information that identifies you will be people who need to contact you to regarding the research or audit the data collection process.

Appendix 27 Participant information sheet for pre-registration tutors and ward staff – chapter 7

Evaluation of a longitudinal ward placement for pre-registration hospital pharmacists

Participant Information Sheet

We would like to invite you to take part in a research study. This study is being run and sponsored by the University of East Anglia. Before you decide whether you would like to participate, we would like you to understand why the research is being done and what it would involve for you.

What is the project about?

The aim of this project is to evaluate the design and implementation of a 13 week longitudinal ward placement for pre-registration pharmacists at [redacted]. In order to capture this information, interviews will be conducted to enable opinions and views to be sought from pre-registration pharmacist tutors and ward staff involved in the placement, as well as from the pre-registration pharmacists themselves. The findings of this study will be formally presented as a part of doctoral thesis, in publications to peer reviewed journals and at conferences.

Why have I been invited?

You have been invited to take part in this research because of your involvement with the 13 week longitudinal placement.

Do I have to take part?

You are not obliged to participate. It is up to you to decide to join the study which involves one interview per pre-registration pharmacist conducting the longitudinal ward placement. If you agree to take part then we will ask you to sign a consent form. You are however free to withdraw from the study at any time, without

giving a reason. If you would prefer to receive no further contact from the research team regarding this research, please email Hannah Kinsey at h.kinsey@uea.ac.uk and state that you do not wish to be contacted further regarding this research.

What will happen to me if I take part?

Please note that participation in this study will not have any effect on your role. We will ask all participants to sign a consent form to indicate if they agree to participate. The interview will be held in a suitable convenient room and is expected to last between 20 and 90 minutes during working hours. Refreshments will be provided.

What will we ask you about?

You will not be asked to talk about anything that you do not wish to talk about. However, if for any reason you do not feel comfortable at any point during the interview, you are free to stop without giving a reason.

What will happen to my interview data?

The interview will be recorded on a voice recorder to enable an accurate recording of your thoughts and experience. Only the chief investigator will listen to the recordings in addition to an independent transcriber who will have access to participants' names, roles and audio files in order to transcribe the data. The recording will be transcribed so that we have a written record for the study to enable evaluation. The independent transcriber will sign a confidentiality agreement. Your name and other individual characteristics will be changed in the transcription so that the participants such as yourself will not be identifiable in any way in this study or subsequent reports.

What are the possible benefits of becoming involved in this project?

The results of this project will be used to influence pre-registration pharmacist training in the future at your hospital and possibly at other institutions as well. Additionally, the preliminary findings from this project will be shared with you.

What are the possible disadvantages of becoming involved in this project?

We do not think there are any disadvantages of taking part in this study, apart from the time taken to participate.

Will I be able to be identified from this interview?

Everything you tell us will stay confidential; we will not tell your employer or anyone else what you personally say. Your identity will be anonymised in the transcript and in any publications or presentations based on this research project.

What if I reveal sensitive information during the interview?

Due to the nature of the topic for discussion, it is unlikely that sensitive information will be revealed, however, you will be asked to refrain from mentioning sensitive information e.g. relating to patients, yourselves, family members or colleagues. If sensitive information is revealed, this will be discussed with you and any potential action reviewed with the research management team.

How will my data be stored?

The electronic anonymised transcript will be stored on a password protected computer. Anonymised paperwork relating to this study will be stored securely in the School of Pharmacy at the University of East Anglia.

Long-term data for this research will be stored in a secure room on a password protected computer at the University of East Anglia (UEA) for 10 years and disposed of in accordance with UEA's data management protocol. All procedures for the handling, processing, storage and destruction of data are compliant with the Data Protection Act 2018.

What if I decide during the interview I do not want to continue?

You can withdraw your consent before or during the interview.

Will I be compensated for taking part?

No, but your hospital will be paid for your time (£25 per interview), enabling you to take time out of your working day to be interviewed.

Travel Expenses

If you have had to travel specifically for the interview, travel expenses can be reimbursed – please contact Hannah Kinsey regarding this.

What happens next if I would like to participate?

If you would like to be interviewed, please email h.kinsey@uea.ac.uk, stating that you would like to participate in an interview. From there, a suitable date, time and venue will be arranged.

What if there's a problem?

If you have any concerns about the study, you should raise them directly with Hannah Kinsey.

Who has reviewed the study?

The study has been approved by Faculty of Medicine and Health Sciences Research Ethics Committee, University of East Anglia.

Further information and contact details

If you would like further information please contact the chief investigator Hannah Kinsey, School of Pharmacy, UEA (h.kinsey@uea.ac.uk / 01603 591973).

What if you have any concerns or complaints regarding this study?

If you have a complaint about how you were approached or how the interview was conducted please contact Professor Mark Searcey (Head of the School of Pharmacy) at the University of East Anglia at m.searcey@uea.ac.uk. He will be able to answer any concerns you may have.

GDPR transparency statement

The University of East Anglia is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. The University of East Anglia will keep identifiable information about you for 10 years after the study has finished.

Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible.

You can find out more about how we use your information by contacting the University of East Anglia.

As a University, we use personally-identifiable information to conduct research to improve health, care and services. As a publicly-funded organisation, we have to ensure that it is in the public interest when we use personally-identifiable information from people who have agreed to take part in research. This means that when you agree to take part in a research study, we will use your data in the ways needed to conduct and analyse the research study. Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you withdraw from the study, we will keep the information about you that we have already obtained. To safeguard your rights, we will use the minimum personally-identifiable information possible.

Health and care research should serve the public interest, which means that we have to demonstrate that our research serves the interests of society as a whole. We do this by following the UK Policy Framework for Health and Social Care Research.

If you wish to raise a complaint on how we have handled your personal data, you can contact our Data Protection Officer who will investigate the matter. If you are not satisfied with our response or believe we are processing your personal data in a way that is not lawful you can complain to the Information Commissioner's Office (ICO).

Our Data Protection Officer is Ellen Paterson and you can contact them at dataprotection@uea.ac.uk

The University of East Anglia will use your name and contact details to contact you about the research study, and make sure that relevant information about the study is recorded for your care, and to oversee the quality of the study. Individuals from the University of East Anglia and regulatory organisations may look at your research records to check the accuracy of the research study [redacted] will pass these details to the University of East Anglia along with the information collected from you. The only people in the University of East Anglia who will have access to information that identifies you will be people who need to contact you to regarding the research or audit the data collection process.

Hannah Kinsey Version 2 252608 14/10/18

Appendix 28 Consent form – chapter 7

Interviewee Consent Form

NHS East of England

University of East Anglia

Evaluation of a longitudinal ward placement for pre-registration hospital pharmacists

Interviewee consent form

If you wish to take part, please initial each box and complete the details on the form.

1. I confirm that I have read and understood the 'Interviewee' participant information sheet dated 14/10/18, version 2 for the above study and have had the opportunity to ask questions. ☐
2. I understand that the interview will be audio-recorded so that what I say will be accurately recorded. I understand that the interview is confidential and that I will not be individually identified in any way in any reports or publications. I agree to my anonymous quotations being used for the research report. ☐
3. I understand that my participation is voluntary and that I am free to withdraw at any time without giving a reason. ☐
4. I agree to take part in this study. ☐

_____	_____	_____
Name of participant	Date	Signature
_____	_____	_____
Name of person taking consent	Date	Signature

When completed: 1 copy for participant 1 copy for research team

For research use only

Participant Identification Number	Participant role

Appendix 29 Pre-registration pharmacist week 0 topic guide – chapter 7

Prior to Interview Starting	• Introduce self • Please note that any work you may have missed as a result of you being here, you will need to catch up on. • We are looking to do a piece of research based on the hospital pre-registration year. Specifically we are evaluating the introduction of a longitudinal ward placement for hospital pre-registration pharmacists. • You have been asked to take part in this interview because we as a research team value your opinions and experience with respect to the longitudinal placement. • I would like to record the session so that I can focus on what you're saying without the need to make a lot of notes, though I may make a few notes if I need to. • It's important to remember when answering and discussing questions that there are no right or wrong answers, please just be yourself and speak as honestly as possible. • Please refrain from talking about specific patients, or aspects of your working life which may not be appropriate in this setting. • Anything that is said within the session will be treated confidentially, your responses will be stored in an anonymous format, and so your name will not appear in any report. • The session should take between 20 – 90 mins • Are there any questions before we begin? • Finally, please relax and enjoy the experience of the interview – I value your thoughts and opinions and this is an environment where you can express your views.	Organise paperwork (consent form and information sheet) Two Dictaphones Spare batteries Notebook Paper and pens Organise refreshments
Switch on the recording device	○ Can you please confirm your name for the recording?	

Main Questions	**Potential Probes**	**Notes**
Tell me about why you decided to do a pharmacy degree	A-levels Profession Inspired by family member/friend	

Tell me about your experience of your University pharmacy course	Learning at University Favourite/least favourite modules Preparation for pre-registration	
Tell me about your work experiences before your pre-registration training began	Summer jobs Community experience Hospital experience	
Tell me a bit about why you volunteered to undertake this placement	Something different Additional ward time	
Tell me about some of the activities you have been doing this far on your pre-registration year	Competencies Dispensary activities Ward activities	
Can you describe any initial expectations that you have for the placement?	Support from staff Personal development Learning opportunities	
Can you describe any concerns or worries that you have regarding the placement?	Prepared Competent Questions Role	
Can you describe what you're looking forward to about the placement?	Particular activity Opportunity	

Closing statements	**Potential probes**	**Notes**
Please take a moment to reflect on the discussions and identify what the most important topic talked about was to you.	Is there anything you feel we should have talked about and haven't?	

Appendix 30 Pre-registration pharmacist weeks 3-14 topic guide – chapter 7

Prior to Interview Starting	• Introduce self • Please note that any work you may have missed as a result of you being here, you will need to catch up on. • We are looking to do a piece of research based on the hospital pre-registration year. Specifically we are evaluating the introduction of a longitudinal ward placement for hospital pre-registration pharmacists. • You have been asked to take part in this interview because we as a research team value your opinions and experience with respect to the longitudinal placement. • I would like to record the session so that I can focus on what you're saying without the need to make a lot of notes, though I may make a few notes if I need to. • It's important to remember when answering and discussing questions that there are no right or wrong answers, please just be yourself and speak as honestly as possible. • Please refrain from talking about specific patients, or aspects of your working life which may not be appropriate in this setting. • Anything that is said within the session will be treated confidentially, your responses will be stored in an anonymous format, and so your name will not appear in any report. • The session should take between 20 – 90 mins • Are there any questions before we begin? • Finally, please relax and enjoy the experience of the interview – I value your thoughts and opinions and this is an environment where you can express your views.	Organise paperwork (consent form and information sheet) Two Dictaphones Spare batteries Notebook Paper and pens Organise refreshments
Switch on the recording device	○ Can you please confirm your name for the recording?	

Main Questions	Potential Probes
Tell me about the activities you have undertaken so far as part of the placement	Appropriateness of activities Timing of activities Scope/inclusion of activities Progression of responsibility with respect to activities Structure of activities Improvements

Tell me about how you structured your day/week	Involvement of supervisors Workbook Autonomy for own timetabling/learning needs Sitting lemon
Tell me about how you used the workbook (if you used it)	Content of workbook Structure of workbook Improvements to workbook Evidence tools; use of, quality of, appropriateness, guidance
Tell me about the supervision/support arrangements in place during the placement	Day to day oversight/supervision on the ward Tutor meetings Practice supervisor meetings Ward pharmacist/technician input Other healthcare professions involvement Improvement for support/supervision
Tell me about your interactions with ward staff	Welcomed Awareness of role and responsibilities Used Team integration Responding to queries Comfort zone Support Evolution
Tell me about your interactions with the pharmacy department during your placement	Dispensary Medicines Information Pharmacist availability
Tell me about your learning and development during your placement	Improved Useful Inhibited Lack of confidence Advantages Disadvantages
Have your learning experiences on your longitudinal placement been different to those on your block rotational placements?	Learning opportunities Skill development Interprofessional working

How has your placement / role contributed to patient care?	Specific examples
Tell me about the affect the longitudinal placement is having on ward staff you are working with	Changed working practices Queries/questions Support Mentoring
What improvements would you like to see being made to the placement overall?	Organisation Training Preparation arrangements
What advice can you give us about running longitudinal ward placements for pre-registration pharmacists in the future	Preparations for pre-reg Preparations for ward staff Preparations for tutor/practice supervisor

Closing statements	**Potential probes**	**Notes**
Please take a moment to reflect on the discussions and identify what the most important topic talked about was to you.	Is there anything you feel we should have talked about and haven't?	

Appendix 31 Pre-registration tutor topic guide – chapter 7

Prior to Interview Starting	• Introduce self • Please note that any work you may have missed as a result of you being here, you will need to catch up on. • We are looking to do a piece of research based on the hospital pre-registration year. Specifically we are evaluating the introduction of a longitudinal ward placement for hospital pre-registration pharmacists. • You have been asked to take part in this interview because we as a research team value your opinions and experience with respect to the longitudinal placement. • I would like to record the session so that I can focus on what you're saying without the need to make a lot of notes, though I may make a few notes if I need to. • It's important to remember when answering and discussing questions that there are no right or wrong answers, please just be yourself and speak as honestly as possible. • Please refrain from talking about specific patients, or aspects of your working life which may not be appropriate in this setting. • Anything that is said within the session will be treated confidentially, your responses will be stored in an anonymous format, and so your name will not appear in any report. • The session should take between 20 – 90 mins • Are there any questions before we begin? • Finally, please relax and enjoy the experience of the interview – I value your thoughts and opinions and this is an environment where you can express your views.	Organise paperwork (consent form and information sheet) Two Dictaphones Spare batteries Notebook Paper and pens Organise refreshments
Switch on the recording device	○ Can you please confirm your name for the recording?	

Main Questions	Potential Probes
Tell me about your thoughts regarding the longitudinal ward placement	Improvements
Tell me about some of the activities the pre-registration pharmacist has been conducting	Appropriateness of activities Timing of activities Scope/inclusion of activities

	Progression of responsibility with respect to activities Structure of activities
Tell me about how you supported the pre-registration pharmacist during their placement	Meetings Evidence tool feedback
Tell me about how you used the workbook (if you used it)	Content of workbook Structure of workbook Improvements to workbook Evidence tools; use of, quality of, appropriateness, guidance
Tell me about the supervision/support arrangements in place during the placement	Day to day oversight/supervision on the ward Tutor meetings Practice supervisor meetings Ward pharmacist/technician input Other healthcare professions involvement Improvement for support/supervision
Tell me about your perceptions regarding the development of the pre-registration pharmacist	Attributable to longitudinal placement or occurred otherwise? Soft skills Confidence
Tell me about your perceptions regarding the learning experiences the pre-registration pharmacist has had during their placement	Sufficient learning experiences Useful experiences Examples Used for technician skills
What improvements would you like to see being made to the placement overall?	
What advice can you give us about replicating this placement in the future?	Preparations for pre-reg Preparations for ward staff Preparations for tutor/practice supervisor

Closing statements	**Potential probes**	**Notes**
Please take a moment to reflect on the discussions and identify what the most important topic talked about was to you.	Is there anything you feel we should have talked about and haven't? Thank you for your time, the findings will be shared with you once the report has been completed	

Appendix 32 Ward staff topic guide – chapter 7

Prior to Interview Starting	• Introduce self • Please note that any work you may have missed as a result of you being here, you will need to catch up on. • We are looking to do a piece of research based on the hospital pre-registration year. Specifically we are evaluating the introduction of a longitudinal ward placement for hospital pre-registration pharmacists. • You have been asked to take part in this interview because we as a research team value your opinions and experience with respect to the longitudinal placement. • I would like to record the session so that I can focus on what you're saying without the need to make a lot of notes, though I may make a few notes if I need to. • It's important to remember when answering and discussing questions that there are no right or wrong answers, please just be yourself and speak as honestly as possible. • Please refrain from talking about specific patients, or aspects of your working life which may not be appropriate in this setting. • Anything that is said within the session will be treated confidentially, your responses will be stored in an anonymous format, and so your name will not appear in any report. • The session should take between 20 – 90 mins • Are there any questions before we begin? • Finally, please relax and enjoy the experience of the interview – I value your thoughts and opinions and this is an environment where you can express your views.	Organise paperwork (consent form and information sheet) Two Dictaphones Spare batteries Notebook Paper and pens Organise refreshments
Switch on the recording device	○ Can you please confirm your name for the recording?	

Main Questions	Potential Probes
Tell me about your role on [insert name] ward	Involvement with training/education
Tell me about your involvement with the pre-registration pharmacist during their placement	Activities Mentoring Learning Shadowing

Did your working practices change at all as a result of the presence of the pre-registration pharmacist during their placement?	Board rounds Ward rounds Questions Medication ordering
Tell me about the learning and development of the pre-registration pharmacist that you observed over the course of the placement	Communication Confidence Team-working
Tell me about some of the activities the pre-registration pharmacist became involved in with you	Appropriateness of activities Timing of activities Scope/inclusion of activities Progression of responsibility with respect to activities Structure of activities
Tell me about how you used the workbook (if you used it)	Content of workbook Structure of workbook Improvements to workbook Evidence tools; use of, quality of, appropriateness, guidance
What improvements would you like to see being made to the placement?	
What advice can you give us about replicating this placement in the future?	Preparations for pre-reg Preparations for ward staff Preparations for tutor/practice supervisor

Closing statements	**Potential probes**	**Notes**
Please take a moment to reflect on the discussions and identify what the most important topic talked about was to you.	Is there anything you feel we should have talked about and haven't? Thank you for your time, the findings will be shared with you once the report has been completed	

Appendix 33 Additional quotes – chapter 7

Background

Pre-registration pharmacists

Pre-registration pharmacist A (PRA)

“what to give, how to give them [medicines]” A0

“feel bad sometimes…should know this” A0

“didn’t even hesitate” A0

“just standing there with nothing to do” A0

Pre-registration pharmacist B (PRB)

“the environment…just wasn’t friendly” B0

“there’s a team around you…more opportunities to interact with patients” B0

“more relevant for actually practising” B0

“learn better from doing…just reading stuff” B0

“be able to be part of a team properly” B0

“turn into the ward skivvy and…be the nurses slave” B0

“see that happening cos there’s too many people that have a vested interest in” B0

Pre-registration pharmacist C (PRC)

“not an easy job” C0

“you really need to be passionate about wanting to help people” C0

“you actually see in practice…how medicines…affect…life of people and how pharmacists help manage that…” C0

“… learn more about…other healthcare professionals that work on the ward…and how we as the pharmacy department can work together with these members to deliver…good patient care” C0

Ward experience prior to placement

"…pharmacists just came on the wards, picked up the drug charts, ordered what needed to be ordered, did the MRs and just left…" A3

"…I think it's quite easy…for a lot of pharmacists to be like 'ok you [PRB] just see the new patients and do their meds rec'…they [pharmacists] don't…really go through the problems with you…or explain any cases to you…cos obviously they don't have much time…" B4

Placement wards

Hospital 1

"…everyone respects each other…they were all really welcoming…I think that's the first ward that I've seen that…openly values the pharmacists and appreciates the job that we have to do…" A0

"…I was concerned that with [prototype placement]…the nurses…[would think] she [PRA] could do what [prototype pre-reg] did straight away…I think over the first week…they've learnt that her skill set…was…different…and I think…now they're able to recognise what her limitations are…" APT1

Hospital 2

"for us [ward staff] I think it was nice…to be a big part of this new trial because it's something that's completely different, so I've kind of felt…almost humbled that [BWP] had said [placement ward] could do that…" BWS

Hospitals 1 and 2

"…we're used to having…students and pre reg's and all sorts with us on drug rounds…she's [PRA] quite knowledgeable so that can be handy if anything" ADS

Implementation

Placement design

Resources

"…the workbook has been…a good guide as to what you should be doing [during the placement]…it wasn't a robust thing, we could amend it as and when we went along, which was good…" A14

"…not looked at it [workbook] for a while…because of the nature of the ward [placement]…certain things…I was doing in the first week…and then I ended up building that relationship [with the staff]…so I feel like [I don't need the structure] …" A7

"…I think we missed a lot of opportunities, to use them [workplace assessment tools], to formally record things that she did…so whether that is because of bad planning or because of the nature of the tool [I'm not sure]." BWP

Induction

"…the first week was…induction so [ward sister] showed me round the ward, introduced me to the staff, I was with the [specialist nurse] for a day…[they] teach me about hand hygiene…[another day] I was with the discharge coordinator… I went with her [to]… meetings, she showed me…what steps goes…in place before a patient gets discharged…[another day] I was with [consultant]…I done the morning ward rounds with him…and then he was…doing a…teaching session [for doctors] which was quite interesting…" C5

Tutor meetings

"… because I'm on [placement ward] he [pre-reg tutor CPT] likes to come on [the ward] …and 'hope you're putting him to use' that's what he told the nurses [jokingly] …yeah [CPT] is cool… we've got a meeting coming up

soon…he's asked me to prepare a case based discussion and then we'll go over it…" C8

Relationship with pharmacy

"…sometimes if it's a late [patient] discharge I'll just come down [to pharmacy], apologise and wait…or give them a hand with dispensing it…and then I'll take it back up [to the ward]…and I think they're [dispensary staff] appreciating it a lot more…I think it's building a relationship with everyone" A7

Adaptations

"…there's not really much to do [on the ward] cos nobody's really around in terms of pharmacy…So I'll ring the [pharmacy] phone and sometimes I'll end up on [other wards]…helping out with anything that they've got to do…" A3

Board round

"…in the board rounds, sometimes they'd [ward staff] flag up things that they wanted us to have a look at…so it was quite useful cos it gives you a heads up…you can prioritise the patients rather than…just bumbling along…" B14

Ward round

"…she [PRB] would normally come along on the ward round in the morning …[BCONS] is very good at discussing medications and it's quite medication heavy on the ward round so…we'd always review all the medication… and then in the afternoon if we had…any queries about…different medications… then [we'd] probably discuss with [PRB]…it was really good…because it's just another source of information…" BFY1

Activity summary

"…I watched a doctor do cannulation…she put the cannula in…[then] she was like 'oh will you apply pressure to this bit of the cotton swab and I'll be back'…I kept pressing down…then I told the doctor…'she's still bleeding' and

she was like ‘yeah she’s on Apixaban’ [blood thinning medication] and…I didn’t think of all of these things. It all makes sense now...” A3

Personal care

“…we talked about…her [PRB] observing personal care and…I actually thought ‘I’m not sure if you really need to do that’. So in the end…I think she probably did …observe personal care in terms of seeing a patient being washed…but there was no need for that [to be repeated]…” BWS

Routine

“…I like the routine…I come in [to pharmacy] at half eight…and then 9am’s like board round and ward round afterwards, I like the set structure…I think it’s gearing me up towards the end when I have to do independent working on my own…cos I’ll be used to working in an MDT where it’s not just pharmacy…I’ll be confident enough to speak to other people” A7

Knowledge sharing

“…sometimes the doctors will come to me and they’ll ask me a question, so I always have the printed guidelines in case there’s not a computer available…” A7

“…I went to morning drug round and…noticed…Amoxicillin [antibiotic] suspension in the patient [locker]…[and] that needs to be in the fridge…I told the nurse..[it] needed to be in the fridge…cos otherwise you have to throw it out…and now they [nurses] do [keep it in the fridge]…” A3

The ward pharmacist

PRA

“I know at the beginning of [PRA]’s placement…the ward sister wasn’t happy…she felt there wasn’t enough senior clinical pharmacist…presence there on the wards with [PRA] and so she felt…[PRA] was left all by herself…so she highlighted that to the department…” APT2

PRB

"…he's [BWP] just like 'ok you write the TTO and then I'll do it separately and see whether we agree'…it's helping me with that next step…and if there's anything that he thinks I've missed he'll be like 'so why didn't you do that?' or 'is there a reason that you did this?'…so he goes through it a lot more [than other pharmacists]" B4

"My approach, is…it depends on your student… probably the old-fashioned way…see one, do one, teach one… I would get her to look into things and report back..." BWP

"…especially when there are complex patients…quite often [BWP] would be like 'no you go on [the ward round]'…so then he'd be like 'so tell me what's going on 'I…really enjoyed it, I felt like I learnt a lot…'" B14

PRC

"… [there] was always someone [pharmacist] I could get hold of if I needed to…I've never found myself on the ward where I need help that I've not been able to reach anyone so…that's good" C5

"…[CWP] she shadowed me for the first couple of weeks [ordering medicines] but now…I go on the ward I do them [medication orders] and then when she comes she checks them…" C8

"…I just don't think he was supervised enough…I don't know that he knew all he needed to [from a pharmacy perspective]…I don't know where he was at with that sort of stuff…" CWS

"…he knew that he wasn't being supported, but we turned it into a positive, how well he was doing…I just think he knew in his heart he wasn't getting the training he should be, the education part of it…" CWS

"…most times I have to cover additional wards in addition to [placement ward]…I would go to the other wards…knowing that PRC has done the medicines reconciliations and he would always cascade or refer problems to me. On the very rare occasions when I just had [placement ward] to cover I

would probably attend the ward rounds for an hour or so with the doctors and…then I would just clinically screen whatever he has done…" CWP

"…he did get a bit more support…I definitely saw more of a presence of other pharmacists around than I have done previously with the pre reg's…it gave him more time to learn..." CDS

The ward team

Hospital 1

"…the…senior nurses…have really…taken him [PRC] under their wing. He's always had someone he can go to if he's in trouble or he's got any issues. They've [nurses] always given him enough time…to write up his evidences and do the…case based discussions…" CPT

Hospital 1 and 2

The pre-registration pharmacists

"…[PRC] got on with everyone, he is very quiet…but he interacted really well…he would always come in and join in the conversation…he wouldn't hide away…he'd always be in the hub of everyone…cos a lot of pharmacists come down here [secluded place on the ward] where it is a bit quieter, but he always stayed up with us…[he was] very involved…" CWS

"…[PRB] was so competent and always wanted to go the extra mile and be helpful, really good knowledge base…very keen to be proactive and learn…she was…aware of her boundaries… she grasped every opportunity to do the very best she could…" BWS

"if they [pre-registration pharmacists] are interested… keen…and eager to um make use of the resources…take advantage of the environment… being on the wards has positively impacted on her development as well but there might be other factors which have contributed to that and some of them might be her as a person maybe her eagerness as a trainee or you know or her personality" APT2

Local viability

Part of the team

"…so I think it was…teething issues at first…we [ward team] were not entirely sure what her [PRB] role could be, but she adapted to it quite quickly and…when she started getting embedded in the team and coming to things…she learnt our names and…I know that sounds trite, but just knowing people's names…is quite important to enable her to get involved a bit more…" BCONS

"…[I] look at their [patient's] antibiotics…if it's…overdue the review date…I just annotate it for it to get reviewed…" C5

"…sometimes they [nurses] don't take into account…the pharmacy…time before a medication comes up [to the ward]…they [nurses]…order transport…in an hour…but…we [pharmacy] should have 4 hours [to do the discharge medicines (TTOs)] cos the pharmacy might be busy…I think this is a matter for the pharmacists to keep educating the nurses about…" C5

"…I think…when you go into any new area where…you haven't met these people … there's a certain level of professional conduct that you need to [show]…but as she got to know us and become part of that team…those professional boundaries…are dropped a little bit…" BWS

"…I think when you build up more of a working relationship with them [doctors], I feel more comfortable to ask more questions and I think that's what I was almost missing on previous rotations…I felt very supported [during the longitudinal placement] but equally very independent in what I was doing…" B14

"…when they [nurses] have discharges, before it would be 'oh this persons going at 2pm, will you be able to make sure pharmacy [is ready]?'…but now they're coming up to me…'what time do you think you'll be ready from pharmacy?'… [AWS]'s like 'the decision's down to you, I don't want to stress you out'" A7

"…I've had a really good relationship with pretty much everyone on the ward…in the mornings when I come in, before the board round, we just have a chat really about pretty much everything from football…[to] Neighbours…so it was good and I think that's one way that kind of helped me immerse in the team…when I attended the rounds…they don't see me like an outsider, they see me as part and parcel of the team…" C14

"…I like to think that I've kind of built…a good relationship with most of the members of the staff…I'm pretty much a member of the team, when I'm sat there patient's buzzer is going off, I go and you answer, find out what they need and they come and say thank you so…I think gradually I'm merging into the team which makes it you know very easy for them to come to me with anything they need which I think all works together to make sure that you know we giving the best possible care to patients which is what they deserve" C8

" … I had a [health and social care] student shadowing me, watching what I'm doing …I bring them round here [pharmacy department]…it really helps with general communication and interpersonal skills…" C8

"…I think as time goes on you become more integrated so I feel like I kind of have a place within the ward team…we're…forming a…basis for a ward pharmacist… role…becoming more established" B7

Enriched learning experience

"…I felt like my learning on [placement ward] I learnt a lot more than I did on any of my [other ward] placements…" B14

"…the placement has definitely helped because it gives you that context…that opportunity to go and see…how a ward works…talking with patients…much more than the current [rotational training] pre-regs get…" BWP

"…we had a ward round and he [consultant] thought of a condition…I'd never heard of it before… and they [patient] were …on the other side of the

hospital so…he took me and all the FY1s down there and had this massive talk through all the medications …'" A3

"…knowing how the clinic works…I think she quite enjoyed mine and was quite helpful for her because it's knowing how people…[are] followed up…your thought process is completely different in terms of the decisions you're making. They're not a five minute consultation with the patient…[so] I've got a decent chance of making a sensible decision…" BCONS

"…when they [ward staff] see things that they think might be beneficial for me to learn, from they'll like call me over…'oh I'm having a drugs round now if you wanna come watch'…they actively look for me to learn" A7

"… so we [junior doctors and myself] built more of a…friendship as opposed to a working relationship so that also helps me learn because…I'd be sitting on the ward reading something, they come over and kind of ask 'oh what are you reading?' and I'd be able to understand it from their view as well…so it helps build up a really good learning environment…" A14

"…every time I went to look and find out [something] I learnt from it…I think you learn more by finding out yourself…so then…when it came up next time I felt completely happy and competent to give a valid answer because I knew I knew the answer…" B14

"…with [ward sister] on [placement ward] she gives you the option to…go away and process it [learning]…Whereas when I've done other rotations…I kind of get home and…I can't…[identify] one single thing I learnt cos it was just 'go go go' non-stop. I wasn't really reflecting on what I had done..." A14

"…I think it's [consultant ward round]...good opportunity [for learning] but then it goes on till about 12pm…so… when there are…orders for medication…new patients that need to be seen, it makes it quite hard for me to attend it everyday…" C5

"…I had [APT1] with me the whole time…I can see how much of an impact that's made on my learning. I've learnt a lot more…and then I've had a lot more to write for my competencies…" A7

"…every time I went to look and find out [something] I learnt from it…I think you learn more by finding out yourself…so then…when it came up next time I felt completely happy and competent to give a valid answer…" B14

"…it's [placement] been quite enlightening…it's interesting to see how it's adapted as the period has gone on…we [pre-registration managers/tutors] try and do our best to try and come up with a programme that's um best for them [pre-registration pharmacists] but having seen that there's more that we could contribute in…greater depth in a prolonged period I think it's something that we can definitely do in the future. What I liked about it the most, it has…certainly improved…their learning…" APT1

"…she [AWS] gives you the option to…go away and process it [learning]…Whereas when I've done other rotations…I kind of get home and…I can't…[identify] one single thing I learnt cos it was just 'go go go' non-stop. I wasn't really reflecting on what I had done..." A14

Development as a professional

Trust and responsibility

"…there was a bit more trust...between me, [ward sister] and…the other pharmacists …I knew my limitations as well…gradually, over the progression of the 13 weeks, just working alongside different members of staff…building that relationship…with them…that's when they saw more of my capabilities…" A14

"…they [nurses] trust me with queries…they also know that even if I cannot answer it they trust me to…find out the answer and get back to them…I like to think that I've…built like a decent relationship…with…most…members of staff…" C8

"…I knew what I was doing, so there was a bit more trust…between me, [AWS]…and the other pharmacists …" A14

"…it gives an opportunity to…work and make mistakes get it rectified or just learn about just pick up as you go really I think that's what this project was about" C14

"…[having more responsibilities] slowly builds my confidence…I think it's needed sometimes…[to] know that you're going in the right direction so it…motivates me to work hard knowing that I'm not making a lot of mistakes, I'm at least doing something right and also knowing I've also got like a safety net at the end it kind of improves my confidence and erm motivation to work harder…positive feedback makes me feel like a valued member of the team…" C8

"…[having more responsibilities] slowly builds my confidence…[to] know that you're going in the right direction…and also knowing I've got a safety net at the end it kind of improves my confidence…" C8

Establishing an identity

"…the nurses…[are] not expecting me to be a nurse…an HCA [healthcare assistant], they're treating me more like a pharmacist but they understand that obviously…there's certain things that I can't do…they all know that I've finished my degree but they also know that I'm not a qualified pharmacist…" B4

"…My main erm concern is that some of the staff on the ward… I'm not sure they've actually got the understanding of what I can do and what I cannot do……" C5

"…I've done a couple of ward rounds with the nurses…they've all been very good in the sense that they're not expecting me to be a nurse, they're not expecting me to be an HCA [healthcare assistant], they're treating me more like a pharmacist but they understand that obviously…there's certain things that I can't do…they all know that I've finished my degree but they also know that I'm not a qualified pharmacist. So they're very aware when I have to say 'oh I need to get this checked'…[and] they're happy with that" B4

"…I think initially no [I didn't know what my role was]…I was…a bit like a sitting duck, I just didn't know where I fitted in. But now…I definitely do, because I…know where to go to help…from pharmacy…[and] I feel like the ward pretty much considers me to be their pharmacist but they know I'm not a pharmacist yet [giggles]" A7

"…[I am] 'establishing' [an identity on the ward]…if you…ask me in 2 weeks' time, it'll probably be a different answer…it's still ongoing…not everyone is crystal clear as to my limitations…you still get the odd nurse that…shrugs…when you tell them 'no I can't do this'…I think I'm establishing…it's loading [draws circle in the air], identity loading…" C8

"…I had to remind people all the time that he is the pre-reg, give him time…people see him as a pharmacist, he was always on his own." CWS

"…I think towards the last four weeks of the placement everyone was pretty clued up as to my role and what I'm meant to do and what the placement is about…slowly but surely we got there" C14

Confidence and independence

"…I'm a lot more confident…with the patients on [placement ward]…the initial encounter is very formal…[then becomes more relaxed]… it's building more of an interaction between us …before I never used to build that relationship it was always …you do the MR, you walk back out…I wasn't as confident because…it was a two-minute interaction…" A7

"…prior to my ward placement…I knew the names of medications but…[not] how to apply them. Whereas now…I feel like I know…because I've been on the wards…I feel a lot more confident …because I have that experience to back up what I say…I feel like it's…triggered me…not to just sit there and read things out of a book, which I think the other pre-reg's are doing because they haven't had that clinical face-to-face." A7

"…I was a lot more independent in the last few weeks cos…I know what to do, I know what my routine is, I know who to call…it made me feel like an actual pharmacist…it made me think beyond the exam …" A14

"[ward pharmacist]…wasn't always…on the ward towards the end [of the placement], because he knew that if I needed something I'd just call him… that worked quite nicely cos I could…do as much as I could, but then I had that support behind me if I needed it … I felt like that gave me that more independence…more of a transition from a pre-reg to a pharmacist…" B14

"…I'm being prepared to be a pharmacist more…but I think there's positives and negatives because they're…gonna see more wards and…specialities but…because there's medical patients on the ward so I do still see a large number of drugs…" B7

"…it [having independence on the ward] made me feel more of like more as part of the team …. made me feel almost…like of the FY1's doctors cos…they're (FY1 doctors) still trusted to…be given tasks and…responsibilities and they can get on with it and if they do have a problem they can go to someone…" A14

Improved pharmacy service

The pre-registration pharmacist service

"…it went very well…being part of the MDT, went on the board rounds and she [PRB] knew a lot more about patients than I did because I only have a limited time to spend, so it's…what we [pharmacy] should be doing anyway." BWP

"…I've seen at first hand when we're [the ward] trying to get hold of a pharmacist to come…I've got the personal numbers for some of these pharmacists so I can get hold of them like much more easily than they [nurses] can…then obviously it means that they will not have to go round looking for a pharmacist…" C14

"…there's lots of questions that we might need to ask her [PRA] um its' nice to see a familiar face every day that you now that the jobs will get done; you're not having to chase around" ADS

"…this [placement] was unique because…every day was an MDT…it benefitted the patient… the pharmacist in the board round was invaluable…it provides a better level of care… and also on ward rounds, it's useful to know what they're [doctors] thinking is behind decisions and they can…ask you questions…so it works both ways…" B14

Patient care

"…I've had a really good relationship with pretty much everyone on the ward…I realised if you if you help them in one way or another they…really appreciate it and…whenever you need something… they're more than willing to help you…they don't see me like an outsider, they see me as part and parcel of the team…" C14

"…since I've been to [placement ward] I've…got into the habit of actually looking at the patient and… every aspect…the blood [tests]…the red notes [blood pressure]…the blue notes [previous admissions]… whereas before [the placement] it was just the drugs…" C5

"…it was a brilliant programme…it really gives…an opportunity to actually get to understand what working in a multidisciplinary team means… [it's an] opportunity to……know how…we can all work together to ensure that patients get the best possible care" C14

"…I know that I'm on the ward all day so I can sit with a patient and…when I'm doing history for a patient, I don't feel rushed so I…just engage in a conversation with a patient…which…allows you to provide a…holistic approach into patient care as a pharmacist…I think that's the way it should be…" C8

Patient discharges

"…they [ward staff] don't have to ask…[PRA] she's got the drive to be able to do it [prepare TTO medicines] in advance…it's almost…intuitive and the response time is quicker…so patients are able to be discharged quicker…" APT1

"…to have someone on the ward…that you know…makes a big difference, so it's a bit more cohesive with things like the discharges…it all flows a bit better because they know the patients…you [nurses] don't have to kind of

keep ringing somebody and chasing somebody for various different bits…" CDS

"…she…was forward thinking…[she] came…[to] board rounds…and was very keen to think about discharge…for the next day…she was very aware of what's going on with all of the patients both medically and socially and that… awareness…made it so much more easier for us…" BWS

Institutionalisation

Continuation of the placement

"…to integrate this [ward placement] or some form of ward-based placement into the pre-registration year next year…where you're there all day…by yourself with a…senior pharmacist there if you need the help. I think kind of being thrown in the deep end with things is the best way to learn. You learn as you go along, as opposed to being told it or always shadowing someone around because then you become familiar to that routine 'oh yeah I'm just following this person or I'm just doing this' and you don't really learn the responsibility of working independently. Whereas now I think of things where I'm like 'ok I'm gonna have to feed this back to the pharmacist who comes on the ward' so I make sure that I do my research properly beforehand [and] I've fully communicated with the other members of staff 'ok what do you need? What's the problem?' things like that, how to go around it. Whereas before when I was just shadowing someone…I was just waiting for them to tell me something that I need to know for the exam, that was it. I wasn't really proactively asking questions or wanting to be involved as much." A7

"it's [placement] got to make a better pharmacist at the end. To have an understanding of… the entire team on the ward, the patient journey…the valuable input the pharmacy element is…cos so many of our patients are on so many medicines, so if we do the pharmacy bit well…that makes a big impact…" BDS

"…I think a lot of doctors, their first experience of a pharmacist is on a ward being like 'you've prescribed this wrong' so it's [placement] kind of about trying to build bridges…" B14

Preparation for the placement

"…in terms of preparation…it will be good…if the person [pre-registration pharmacist] can do it [placement] after they've done certain accreditations such as medicines reconciliation…ordering medication… rewriting a chart…they can…be a bit more useful and help out [during the longitudinal placement]" C14

Length of the placement

"…very often [the benefit] it's in those last…4 weeks [of the placement] that they say 'oh I feel like I'm there, I'm getting this now' so if you…cut it shorter…you might miss that…" BDS

"…in practice …pharmacists…don't spend all the time on the wards…it's kind of mixed services that we provide… to make it [training] more realistic…spread it [placement] out…over the training year…not just have it as a block programme…" APT2

Timing of the placement

"…[starting after Christmas] means you can actually help out on the ward…which makes things…easier and cos you're there to learn… [and] to help as well, so it's a two way street …" C14

"…if you'd [pre-registration pharmacist] have been spending every afternoon revising for the exam he [PRC] would have missed out on a lot of the stuff that's going on in [placement] ward…" CPT

Qualities of the ward and ward staff

"…I think it [placement] requires a ward that's quite diverse…not just [one condition] all the time so you see other [conditions]…" B7

"…I would like to test it [placement] out in a probably more rapid turnover [of patients ward]…I have no reason to believe that it wouldn't work…and actually it would be a good thing to do…" BWP

"…somewhere that has a good contact for education, is willing to do it…and has … the resources to …help them [pre-registration pharmacist]. So…some…wards have education facilitators… who can help … put together a plan…" CPT

Qualities of the ward pharmacist

"…if they see someone that is a pharmacist, they won't necessarily think…'she's not qualified yet'… which is [why], the whole thing then about having…support…from someone senior to help her [is important]…" ADS

Qualities of the pre-registration pharmacist

"…it's got to be people [pre-registration pharmacists] who are interested…with a lot of the teaching being ad hoc and ward round based you've got to be quite self-motivated and…have quite a decent concentration span…learning on a ward round is different to sitting down to a lecture or reading a text book…so you've got to have someone who…has quite a high verbal way of learning…" BCONS

"…people have got to want to do it with it being a new thing. People are scared of change…and deviating from their peers. I think as long as people understand what it's about…you've got to have had enough people that have done it and enjoyed it so…it's got to be people who are interested in it…" BCONS

"…it [placement results/outcomes]…might boil down to…[the] individual…and if they are interested…being on the wards has probably helped…her [PRA] development … but there might be other factors which have contributed to that…her as a person …her eagerness…or her personality" APT2

Support and supervision

"…just to know…that she's [PRA] been supervised enough. I do question sometimes if she has been… supervised…I don't think she was [supervised] at the beginning… …which I raised…I didn't want to let her down as her supervisor [and] I didn't want her to be let down by anyone [else]…" AWS

"…it's [placement] good. I think it's intensive …in terms of how much …work we have to put in to mentor them and have them on every ward round…I think in the future, we perhaps couldn't keep up that level of intensity…it was easy with [PRB] because she was keen … if you've got someone who is like trying to get blood out of a stone…keeping up that enthusiasm in…[this] model might not be as easy" BCONS