Pharmacy education and training in the hospital service in Wales: Identifying demand and developing capacity

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Abstract

This exploratory study investigated NHS hospital pharmacy training workload and capacity in Wales using an unfolding research approach. Preliminary interviews with key stakeholders were used to inform the development of the main study. The study then aimed to estimate workload and capacity for work-based pharmacy training, explore reasons for variations in training workload between sites and develop recommendations for practice that would optimise NHS hospital preregistration pharmacist training capacity in Wales. A multi-method study design using interviews, questionnaires and a multiple-site case study was employed. All NHS hospital pharmacy training sites in Wales (n=17) were included in the study and a 100% response rate was achieved. Estimates of training workload for diploma pharmacists, preregistration training pharmacists and student pharmacy technicians were obtained. The workload involved in preregistration pharmacist training was 6.5 hours per week per trainee (range 3.0 – 14.9), which was higher than for any other staff group and resulted in this area being identified as the priority for further study. Subsequent research into training practices identified that some preregistration trainee pharmacists were not given enough responsibility and did not always make an appropriate contribution to service delivery; the content and level of some training was not appropriate for those approaching registration and there was a lack of common understanding amongst some tutors and trainers about the purpose of some elements of the training programme. Strategies and recommendations to address these issues were developed and agreed with lead tutors. Implementation of these recommendations should optimise use of available training capacity which could lessen the impact of an increase in training demand on NHS services. A significant amount of time and money is dedicated to work-based training of NHS professionals; strategies like those described here, that aim to make effective use of existing capacity, are essential in a resource-constrained NHS.

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Chapter 1

Introduction

The purpose of this chapter is to provide contextual information about the work that is described in this thesis and explain the research approach taken. The subject of the study was demand and capacity for NHS hospital pharmacy education and training in Wales. The need for the research was identified in 2005 and data collection took place between 2006 and 2009[1]. There were several complex and interrelated factors that affected Welsh NHS hospital pharmacy services at the time of the study which are disentangled and explained here. The study remit did not extend to NHS hospital pharmacy in England, Scotland or Northern Ireland and did not cover training in other pharmacy settings. Explanations are provided within the text to explain whether the issues that are referred to relate purely to NHS hospital pharmacy in Wales or include other countries and settings.

Chapter outline

This chapter begins by describing the political context for the delivery of healthcare in Wales in the years leading up to the study and then focuses on issues of particular relevance to NHS hospital pharmacy education, training and workforce development in Wales. The chapter then explains the need for the present study and summarises the research approach that was taken.

Political context

In 1997 the newly-elected Labour government held a referendum on devolution that led to the creation of new elected bodies in Scotland, Wales and Northern Ireland. In Wales, the National Assembly for Wales (NAfW) was created by the passing of the Government of Wales Act in 1998. (1) The new governments were given various powers which, in Wales, included the organisation and delivery of healthcare and education. Initially, the newly-formed Welsh health directorate adopted a broadly similar policy direction to the Department of Health in England, but as time progressed, divergence of NHS policy between the home countries became increasingly marked. (2)

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[1] This was prior to the re-organisation of the NHS in Wales which resulted in the merger of Welsh NHS Trusts and Local Health Boards into integrated Local Health Boards.

In 1997, concerns about the standard of care in the NHS, (3) led to a number of initiatives that were aimed at improving the quality of NHS services. The first was the white paper "The New NHS, Modern, Dependable" that gave all health organisations in the United Kingdom a statutory duty to improve quality. (4) More details of the new arrangements, including the introduction of clinical governance and lifelong learning were provided in "A First Class Service" in 1998. (5) The report of the Kennedy Inquiry (6) into children's heart surgery at Bristol Royal Infirmary was published in 2001. The inquiry report included recommendations about competency, safety and standards, re-enforcing the need to improve quality in the NHS.

The initiatives to improve quality, described above, were accompanied by increased investment in the NHS. The NHS Plan (7) published in 2000, outlined a programme of investment and reform of NHS services over a 10-year period. It promised significant funding to ensure that by 2004 there would be 7,500 more consultants, 2,000 more general practitioners, 20,000 more nurses and 6,500 more allied health professionals in England. This would be achieved by increasing the number of training places, including 4,450 more training places per year for "therapists and other key professional staff", which would include pharmacists. The plan announced the introduction of national occupational standards and training for all staff that did not hold a professional qualification. The plan promised to deliver greater patient choice, shorter waiting times, more transparency and improved quality of care. It included the introduction of a new system of pay and conditions for NHS staff ("Agenda for Change" (AfC)), (8) aimed at re-engineering NHS ways of working to be more responsive to patients' needs. The pay bands that employees were assigned to were determined by the roles that they performed, which may have incentivised some staff to undertake further training and accept more responsibility. The AfC programme included a "Knowledge and Skills Framework" (KSF). (9) All staff had to demonstrate competence against the KSF in order to progress through certain gateways on their pay spine. Although the NHS Plan (7) was for England, the same policy direction was adopted in Wales and the Welsh government invested heavily in the NHS between 2000 and 2006 in order to improve service delivery, quality and accountability.

Pharmacy regulation and role development

At the same time as addressing quality in the NHS, the government passed the Health Act 1999 (10) which required regulatory bodies to tighten control of healthcare professionals in an attempt to reassure patients and the public about practitioners' fitness to practise. The Royal Pharmaceutical Society of Great Britain (RPSGB), the then pharmacy regulator, had to put new measures in place to ensure that their registrants were competent to practise. As a result, a system of undertaking and recording continuing professional development (CPD) (11) was implemented to ensure that registrants were keeping up-to-date with developments. At the time, the RPSGB undertook a dual role of leadership and regulation, however, this position became untenable[2] when a review of the regulation of non-medical healthcare professionals (12) was published in July 2006, as it signalled that regulation had to be seen to be free from the influence of those promoting the profession's rather than patients' interests.

By coincidence, whilst the regulatory requirements of healthcare staff were being tightened, significant developments to the roles that pharmacy staff could perform were taking place. In 1995 the RPSGB had begun a consultation process to develop a strategy for pharmacy in the 21st century. This resulted in the production of the "Pharmacy in a New Age" report, (13) which identified that pharmacists' clinical skills were under-utilised and that they could play a much greater role in the delivery of healthcare. Extended roles such as medicines use reviews and supplementary prescribing were envisaged. In order for this shift to happen, the medicine supply function needed to be delegated to pharmacy support staff that in turn would need to accept greater responsibility. This improved use of skill mix was in tune with government thinking as described in the English Department of Health's consultation document on workforce planning "A Health Service of All the Talents". (14) This report suggested that traditional role boundaries between professional groups should be removed allowing greater flexibility in the way that healthcare could be delivered. In 2000, "Pharmacy in the Future" (15) was published, further highlighting the opportunities for pharmacists in

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[2] A split of the functions was finally confirmed when the white paper "Trust, Assurance and Safety" was published in February 2007. The RPSGB demerged and the General Pharmaceutical Council (GPhC) was formed on 27th September 2010.

England to develop their roles. A new contractual framework for community pharmacy was proposed where specific services such as smoking cessation clinics could be commissioned to meet local needs. Several opportunities for pharmacists to make a greater contribution to healthcare were identified, including pharmacist prescribing and de-regulation of prescription-only-medicines to allow a greater range of medicines to be sold "over-the-counter". In England, the potential for pharmacists to undertake advanced roles was further supported when funding was made available for consultant pharmacist posts in 2005. (16)

In 2002 policies for development of pharmacy services in Scotland and Wales emerged. (17, 18) "Remedies for Success" (18) was a consultation document on a ten-year strategy for pharmacy services in Wales. The document outlined a number of actions that were designed to help pharmacists improve the pharmaceutical health of the population of Wales. The challenges facing NHS services in Wales were similar to those in the other home countries and so not surprisingly, some of the developments in Wales, such as supplementary prescribing, mirrored those included in the "Pharmacy in the Future" paper for England. (15) However, "Remedies for Success" also acknowledged the challenges faced by pharmacy services in implementing the new developments and highlighted the need for enhanced education and training infrastructure, accurate workforce predictions, funding for support staff training and measures to deal with capacity.

In 2001, a review by the Audit Commission of medicines management in NHS hospitals in England and Wales (19) recognised the valuable contribution that hospital pharmacists could make to the care of patients. This report helped to raise the profile of NHS hospital pharmacists with senior hospital management and resulted in pharmacists being given greater responsibility for medicines management in their organisations. This created a high demand for the clinical skills of hospital pharmacists and as a result many moved away from the traditional supply function to become more fully integrated into the clinical team.

Changes to pharmacy education

In 2002 the RPSGB commissioned work to look at research and development priorities in pharmacy education. A report of the work "Making Pharmacy

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Education Fit for the Future" (20) was published in 2004 and included education and training from undergraduate level through to revalidation and return to practice. The report contained a series of recommendations for the profession to take forward. These included the development of a comprehensive map of the knowledge, skills and attitudes required of pharmacists (21) and restructuring of the undergraduate curriculum to look at ways of integrating clinical teaching and learning more effectively. The results of the "Fit for the Future" report (20) were taken forward by the RPSGB to develop new rules relating to registration, continuing professional development (CPD) (11) and fitness to practise, in anticipation of the passing of the "Section 60" Order. (22) The Order was a statutory instrument developed by the Department of Health but the RPSGB was responsible for developing the rules that underpinned the order. The rules had to be in place in order to enable the relevant legislation to be workable. By 2006, the new education principles had been developed and were being consulted upon. (23) A description of pharmacy work-based training requirements that were of relevance to this study is provided in Chapter 2.

The pharmacy workforce

In 1998, following the publication of the "Pharmacy in a New Age" report, (13) the RPSGB commissioned research to provide a better understanding of the pharmacy workforce and their skills, competencies and aspirations. The report, published in 2001, (24) proposed a research agenda upon which a series of censuses (25-27) and other studies of the pharmacy workforce were based. (28-33) The 2005 workforce census revealed that there were 46,396 pharmacists on the GB register. (27, 33) Of these, 2,246 (4.8%) had a registered address in Wales. The number of practising pharmacists was noted to have fallen in all three home countries since the previous survey in 2003. The majority of pharmacists (70%) had a job in community pharmacy, and 21% had a job in hospital pharmacy[3]. (27) The census had a response rate of 76.6% and so may not have precisely reflected the total population, but did provide useful data about pharmacist participation in the workforce for workforce planners, policy makers and employers. However, it did not relate the numbers of pharmacists in the workforce to demand for their services.

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[3] Some pharmacists held jobs in more than one sector.

In 1995 the NHS pharmacy education and development committee (NHS PEDC)[4] had identified that there may be a shortage in the number of newly qualified pharmacists available to join the hospital pharmacy workforce. A survey was undertaken to provide data on recruitment to hospital pharmacist and pharmacy technician posts. (34) The survey provided valuable data and was repeated periodically thereafter. (35-38) The findings of the 2006 survey (37) showed that there were 6,062 whole time equivalent (wte) pharmacist posts and 6,870 wte pharmacy technician posts in NHS hospitals in Great Britain. The vacancy rate for hospital pharmacist posts was 11.7% for all pharmacist posts and 16.8% for junior pharmacist posts[5], which was consistent with earlier surveys. For pharmacy technicians, the vacancy rate was 8.2% overall and 10.6% for junior posts[6]. These data confirmed that there were problems in recruiting sufficient numbers of staff to junior grade posts. The situation in Wales, though problematic, was less marked. The vacancy rate for all hospital pharmacists in Wales was 5.4% and for junior grade pharmacist posts it was 7.7%. The 2006 survey (37) identified that there were 642 preregistration trainee pharmacists in NHS hospitals in Great Britain and 1,612 wte junior hospital pharmacist posts, almost half of which could be anticipated to become vacant each year as these were training grade posts, which were usually held on a fixed-term basis for two years. The results of this and the earlier surveys highlighted the need to increase the supply of novice pharmacists entering the service. This could only be achieved by increasing the number of trainees or by recruiting from outside the NHS. There was anecdotal evidence that community pharmacy employers were also having problems in recruiting adequate numbers of novice pharmacists to meet their workforce demands thus re-enforcing the case for an increase the number of trainees.

In 2002, the RPSGB commissioned King's College to undertake research aimed at developing a system for analysing future workforce needs and make

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[4] The NHS PEDC had representatives from every English Strategic Health Authority area and the Home countries. The stated purpose of the committee was to provide co-ordination in pharmacy education, development and training within National Health Service organisations primarily, but not exclusively, in secondary care.

[5] Junior pharmacists were classed as Whitley Council grades A-C and AfC Band 6.
[6] Junior pharmacy technicians were classed as Whitley Council grades 1 & 2 and AfC Band 4 & 5.

recommendations about how future supply and demand could be managed. The report of this work (39) was published in 2004 and included a prediction that in a period from 2003 to 2013 the number of pharmacists required in the workforce was predicted to rise by 38% in hospitals and 64% overall. The predicted growth in the numbers of pharmacists over the same period was 44% indicating that there was going to be a significant shortfall in the supply of pharmacists in GB. A number of recommendations aimed at bridging the gap between supply and demand were made. These included increasing the supply of pharmacists to the market by improving recruitment and retention, increasing access to training and making pharmacy careers more attractive.

The findings of the King's College research were consistent with predictions that were identified by the Welsh Assembly Government's workforce planning processes. In 2005 these plans indicated that the Welsh hospital pharmacist workforce needed to increase by more than 50% over the following four years. (40) The number of wte pharmacists needed to rise from 486 to 751 (an increase of 66 wte per year). The number of wte pharmacy technicians needed to rise from 433 to 666 (an increase of 58 wte per year). Research had suggested that there were insufficient numbers of qualified staff available to achieve this increase in the NHS workforce by increasing their hours or moving into the hospital sector from elsewhere in the labour market. (41) An increase in staffing levels of this magnitude could only be achieved through the recruitment and subsequent retention of higher numbers of novice trainees. In 2006 there were 36 preregistration trainee pharmacists and 35 first year preregistration pharmacy technicians in the NHS hospitals in Wales (data on file[7]). Even if all the Welsh hospital trainees were recruited into full time NHS posts in Wales the workforce plans would still not be met. Losses from the service due to factors such as retirement or staff taking reduced hours contracts would compound these issues.

Number of pharmacy graduates

Unlike most other healthcare professional groups, pharmacy undergraduate education was not commissioned by the NHS and the numbers were not linked to NHS workforce planning processes. Despite this, the numbers of pharmacy undergraduates had increased, mirroring the increased demand for

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[7] Data held in the office of the All Wales Education and Training Pharmacist

pharmacists in the workforce. Undergraduate pharmacy places were funded by the Higher Education Funding Council for England/Wales (HEFCE/W). The allocation of funded places for each course was determined by the universities, based on their overall HEFCE/W allocation. The number of places on a given programme could only be increased by increasing the HEFCE/W cap, or by transferring funding from other programmes of study. Investment in undergraduate education in the United Kingdom had increased steadily from 1999 to 2006 under the Labour government which had set a target for 50% of all 18 to 30 year-olds to be able to participate in higher education. This led to the expansion of existing pharmacy courses and the opening of new schools of pharmacy. As a result, the number of pharmacy graduates from schools of pharmacy in the UK was predicted to rise from 2,002 in 2006 to almost 3,000 graduates by 2010. (42) The number of graduates from the Welsh School of Pharmacy in Cardiff was predicted to increase from 92 in 2006 to 121 in 2010. (42) Pharmacy graduates from Cardiff University were the main (but not the only) source of NHS hospital preregistration trainee pharmacists in Wales. In contrast, the supply of novice recruits to student pharmacy technician posts was not restricted as the minimum entry requirement to these posts was 4 GCSEs and training posts could be offered to school leavers.

Reasons for concern about pharmacy training capacity in Wales

The Welsh Assembly Government (WAG) commissioned education and training to meet the demand for staff in the NHS in Wales. Local intelligence was gathered about training capacity to ensure that the number of trainees that were commissioned did not exceed the capacity of the service. WAG provided salary costs and course fees for pharmacy trainees but no infrastructure costs. Representatives from schools of pharmacy in England and USA had already expressed concerns about the impact that additional numbers of pharmacy undergraduates had on workload. (43-45) NHS hospital pharmacy managers in Wales had similar concerns about the effect that an increase in work-based training would have on service delivery. (46) Two scenarios were considered possible. The first was that training workload would increase to exceed capacity, potentially jeopardising training quality or, if resources were diverted, service delivery. The other possibility was that WAG may not fund additional pharmacy trainees unless they were sure that

there was sufficient training capacity available. Ultimately this would limit development of NHS hospital pharmacy services in Wales.

In summary, in the years prior to the instigation of this study there had been a number of policy and related developments that affected work-based pharmacy education and training. The developments included a tightening of the regulatory framework for healthcare, improved quality standards and an increase in the number of training programmes that needed to be delivered. In addition, it was predicted that the number of pharmacy trainees that the NHS should accommodate needed to rise to meet workforce demands. These factors could all contribute to an increase in training workload and it was anticipated that there would not be any additional infrastructure resource. There was a concern amongst NHS hospital pharmacy employers in Wales about the impact of additional training demands on service delivery. In 2005 the NHS Welsh chief pharmacists' committee formulated a strategy (47) outlining their vision for the development of pharmacy services over the following five years. Areas that required action were translated into objectives for one or more of the subgroups[8] of the main committee to address. The education and training subgroup was set an objective to: "Develop an understanding of the impact of training requirements on our capacity to increase the hospital pharmacy workforce at an appropriate rate".

The chair of the education and training subgroup wrote a project proposal to address the objective. They applied for, and were successful in obtaining, funding from the Welsh Assembly Government's Pharmacy Practice Development Scheme (PPDS) to support the work, and ultimately became the lead researcher for the project. It was from this informed position of direct involvement with the education and training strategy for the NHS in Wales that some of the decisions about the development of the project emerged. At this point, it is worth considering the researcher's role in this project and to consider "why me", "why this?" and "why now?". Before embarking on this

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[8] The Welsh chief pharmacists' committee had nine subgroups that each took the lead in development of specific areas of the NHS hospital pharmacy services across Wales. The subgroups were each chaired by a lead pharmacist in the specialist area. The chair of the education and training subgroup was the All Wales Education and Training Pharmacist, whose post was centrally funded by the Welsh Assembly Government but was answerable to, and had objectives set by, the Welsh chief pharmacists' committee.

study I had worked in hospital pharmacy for eighteen years since registering as a pharmacist and had specialised in training and workforce development for the last nine of those years. As a pharmacy education and training lead, initially for an NHS region in England and then in Wales, I had observed pharmacy training practices in several NHS hospitals and so was aware of the diversity that existed and had considered the challenges of identifying and sharing best practice. I recognised that there was a need to develop a firmer research base to provide evidence for pharmacy training developments in Wales. Because of my education and training role, I was particularly interested in building partnerships with academia to facilitate future education and training initiatives. In summary, the circumstances provided an opportunity for me to undertake work that was of strategic importance to NHS hospital pharmacy services in Wales, build greater links between the NHS in Wales and Cardiff University and develop my research skills which would be relevant and useful for undertaking future development work.

Research questions

The research questions that the Welsh chief pharmacists needed addressing were relatively open at the start of the study and became clearer to the researcher as the study progressed. Ultimately, the research questions were:

- Why was the research needed?

Once this was more clearly defined, the next questions were:

- How much time was spent on work-based NHS hospital pharmacy training in Wales?
- How did the training workload relate to training capacity?

Finally, when the research had been focussed on NHS hospital preregistration pharmacist training in Wales, the questions were:

- What influence did the use of particular training practices have on training workload?
- Which training practices could optimise training capacity in NHS hospital preregistration training sites in Wales?

Research approach

The research approach was not tightly pre-determined and instead was of an unfolding structure where each stage informed decisions about the next. (48) This resulted in a multi-method approach being taken. An exploratory

approach was used to develop an understanding of the need for the research; a descriptive approach was used to scope the field as this was a new area of study; an exploratory approach was used for hypothesis generation and a survey was used to develop recommendations. The initial research area was broad and spanned all work-based NHS hospital pharmacy training in Wales. As the research progressed it was focused on NHS hospital preregistration pharmacist training as that emerged to be most important to the research aims as this was where the capacity problems were thought to be most acute.

Thesis structure

This thesis is comprised of six chapters. Chapters 2 - 5 describe empirical work and are presented in chronological order of the work undertaken. This allows the reader to understand how each stage of the process led to the next. The aim and objectives of each empirical chapter are included within each chapter.

Chapter 2 describes the preliminary exploratory research used to gain stakeholder opinion about the need for the study using key informant interviews.

Chapter 3 describes descriptive research which used a questionnaire to obtain data from all 17 NHS hospital pharmacy training sites in Wales, to estimate training workload and capacity for all work-based NHS hospital pharmacy training. From this knowledge base, the priority of the research was identified as being NHS hospital preregistration pharmacist training.

Chapter 4 explored NHS hospital preregistration pharmacist training in Wales using a case study approach to generate emergent hypotheses about the impact of various training practices on workload.

Chapter 5 describes work that developed recommendations that would be suitable for all 16 NHS hospital preregistration pharmacist training sites[9] in Wales.

Chapter 6 discusses the major findings of the research and reviews these in relation to current and potential future practice developments. The chapter includes recommendations for practice, suggestions for further research and reflects on the purpose of conducting the research, including the methods used.

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[9] One of the hospital pharmacy training sites discussed in Chapter 3 did not undertake preregistration pharmacist training so was not included in the remainder of the study.

Chapter 2

Scoping the pharmacy training workload and capacity issues in NHS Wales

Introduction

The education and training subgroup of the Welsh chief pharmacists' committee had an objective to: "Develop an understanding of the impact of training requirements on our capacity to increase the hospital pharmacy workforce at an appropriate rate". (47) Work on this objective led to the exploratory research which is described here and which led to further unfolding research (48) that is described in subsequent chapters.

Chapter Outline

This chapter begins by describing why NHS hospital pharmacy training workload was increasing and how that may have related to training capacity. The chapter then describes preliminary research in the form of consultation with key stakeholders to identify what work was needed. The results of this exercise are presented and the chapter concludes with an outline of proposals for the next stage of the research which is described in Chapter 3.

Why was an increase in NHS hospital pharmacy training workload anticipated?

There were two main reasons why an increase in NHS hospital pharmacy training workload was anticipated. The first was the changing nature of the training that was being delivered and the second was a predicted increase in the numbers of trainees.

1. Changes to pharmacy training requirements

In 2005, the NHS hospital pharmacy workforce consisted of pharmacists, pharmacy technicians, pharmacy assistants and ancillary staff. Over the preceding decade there had been a shift in hospital pharmacy skill mix, with a consequent upgrading of the entry requirements required at each level.

In 1997, a new four-year Master's level degree (MPharm) replaced the previous three-year Bachelor's level undergraduate pharmacy degree (BPharm or BSc). The minimum requirement for pharmacist registration became completion of the Master's level degree plus one year of

preregistration pharmacist training. (49) The additional year of undergraduate education enabled changes to the degree to incorporate more exposure to clinical practice than was previously possible, (50, 51) although the extent to which this change was enacted was somewhat limited. (52)

In 2001, the Royal Pharmaceutical Society of Great Britain (RPSGB) altered the preregistration pharmacist training programme for all trainees to be based on a new set of performance standards. (53) The new materials were introduced in time for use by the first graduates from the new Master's level degree. Training and assessment against the performance standards were supervised by RPSGB approved preregistration pharmacist tutors in each employing organisation. (53) Trainees had to complete their preregistration pharmacist training year to the satisfaction of their tutor and pass the registration examination before they could apply to join the register of Pharmaceutical Chemists and use the protected title of pharmacist.

In NHS hospital pharmacy, training programmes usually took the form of a rotational programme through sections of the pharmacy such as the dispensary, clinical areas, technical services and medicines information. To complement the in-house programme, trainees in the NHS in Wales attended a series of residential courses and undertook visits to other settings during the year.

Formal training of NHS hospital pharmacists in Wales usually continued beyond the point of registration. Most[10] NHS hospital pharmacists in Wales undertook a two-year postgraduate diploma in clinical pharmacy soon after registration in order to progress to a career level grade. The diploma course was offered as a modular programme which took two years to complete on a full-time basis. In total, the usual route to become a career grade hospital pharmacist took seven years[11], three of which were wholly undertaken whilst employed and being trained by the NHS.

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[10] The Welsh Assembly Government provided funding for approximately 30 pharmacists a year to undertake the Cardiff University postgraduate diploma in clinical pharmacy.
[11] Only a small proportion of pharmacists were thought to join the hospital pharmacy workforce after undertaking their preregistration pharmacist training in another sector.

In 2003 amendments were made to the Health & Social Care Act (54) which allowed supplementary prescribing by non-medical practitioners, including pharmacists. Courses were developed for those wishing to practise in Wales and commenced in 2005. Once qualified, pharmacist supplementary prescribers had a separate annotation on the pharmacist register and had to provide evidence of their continued competence to practise in the clinical area(s) that they prescribed in through the CPD process. (11) This, and the general move towards fitness to practise and revalidation, meant that there was an increasing need for specialists to be able to demonstrate their competence. As a result, some groups had started to develop methods for accrediting practitioners at various stages in their career. (55) In England, the competency development education group (CoDEG) developed frameworks for general, advanced and consultant level practitioners. (56-58) Others used a competency approach to design courses for advanced practitioners.(59) In 2006, use of the CoDEG frameworks had been trialled by a small number of NHS hospital pharmacy departments in Wales and it may have been reasonable to assume that further developments to recognise advanced and specialist practice of pharmacists in Wales would follow.

Alongside the developments in pharmacist training, a parallel development in the training requirements of pharmacy support staff was taking place. In 2005 the RPSGB opened a voluntary register for pharmacy technicians as a prelude to the planned introduction of mandatory registration. (60) Prior to this, training to become a hospital pharmacy technician in Wales had involved study at a Further Education College to gain a Business and Technology Educational Council (BTeC) National Certificate in Pharmacy Services. This was undertaken on a day-release basis over a two-year period whilst working in a hospital pharmacy. Trainees underwent a series of rotations through the various sections of the pharmacy such as dispensary, stores and ward areas in this period, although the work-based training element was not formalised. When the register of pharmacy technicians was introduced, the minimum entry requirement became the National Vocational Qualification (NVQ) in Pharmacy Services at level 3. The NVQ consisted of a number of mandatory and optional units (61) which had to be worked upon whilst employed in a pharmacy setting. (62) Trainees needed to prove their competence by producing a portfolio of evidence for their NVQ assessor to review. The

college-based course was still used to provide the underpinning knowledge for the NVQ. The introduction of the new vocational element of the training programme required considerable input from work-based trainers and assessors.

In addition to the qualifications required to join the register, as a result of service developments, it was becoming common practice for pharmacy technicians to undertake further competency-based training to perform roles such as technical accuracy checking and medicines management. (63) Candidates were trained and assessed for their ability to perform these roles in-house by colleagues, who in turn, had been trained as NVQ assessors. As a result, the workload involved in pharmacy technician training in the work place was increasing.

In 2003, the RPSGB announced the introduction of a new minimum requirement for all support staff involved in the supply of medicines, for example, pharmacy assistants in hospitals (and medicines counter assistants in community pharmacies), to hold (or be working towards) units of an NVQ at level 2 that were relevant to their role. (62, 64, 65) All pharmacy staff that did not already hold a suitable qualification had to be working towards the relevant units by 1st January 2005. In practice, this led to the development and introduction of an entirely new training programme for a group of staff who traditionally had received very little formal education or training. Qualified NVQ assessors were responsible for training and assessment of the candidates against the standards. Underpinning knowledge was delivered through work-books containing information, self-assessments and work-based activities. Unlike other pharmacy training programmes, the time taken to complete the NVQ level 2 programme was not dictated by external factors such as attendance at college, but varied depending on the rate of progress of the individual candidate through the programme and the number of units being attempted. This new requirement contributed to the increase in training workload for NHS hospital pharmacy departments.

In addition to the training of their own employees, hospital pharmacy departments provided work-based experience and training for other groups, including pharmacy undergraduates on clinical placements (as a degree requirement); (66) preregistration trainee pharmacists from community on

cross-sector experience; (67) pharmacy undergraduates on summer vacation experience (an optional experience that aided recruitment decision making); medical students; nurses and school pupils on work experience placements. Some of this training work was reciprocated, for example, by community pharmacy employers who took hospital preregistration trainee pharmacists for periods of cross-sector experience, but nevertheless, anecdotally the workload involved in accommodating external trainees was considerable.

The mandatory training requirements for Trust employees on topics such as "lifting and handling" and child protection were increasing. This had an impact on the capacity of in-house trainers to deliver the non-mandatory training. The introduction of the Knowledge and Skills Framework in 2004 (9) placed further pressure on training resources. Individuals had to produce evidence of their competence in order to progress thorough gateways on a pay spine.

In summary, pharmacy education and training in Great Britain underwent significant change between 2000 and 2006. The changes that may have particularly contributed to changes in NHS hospital pharmacy training workload included:

- the introduction of a new preregistration pharmacist training programme based on performance standards in 2001; (53)
- the introduction of a voluntary register for pharmacy technicians who had completed the NVQ level 3 in 2005; (60)
- the introduction of the NVQ level 2 for pharmacy assistants in 2005. (62)

In the NHS in Wales there was some modest infrastructure support for training, through the post of All Wales Education and Training Pharmacist and three Associate Course Directors (ACDs) for the Cardiff University postgraduate diploma in clinical pharmacy. However, there was no protected training infrastructure at Trust level and almost all of the work involved in setting up and supporting the new training programmes had to be absorbed by the hospital pharmacy departments.

2. Predictions about the number of trainees required

Accurate predictions about the numbers of staff required in the health service were generally difficult to obtain. Workforce planners gathered intelligence

from a variety of sources in order to predict future workforce requirements and calculate the numbers of trainees required in the service. In 2004, the Welsh healthcare workforce planning processes were changed so that they were undertaken according to need, not affordability. This method of workforce planning predicted that a higher number of trainees would be required in the service than had been foreseen in previous years. The workforce plans indicated that pharmacy staffing levels had to rise significantly if the demands for service provision were to be met. (40, 68) For reasons discussed in Chapter 1, the supply of pharmacy staff was inadequate and it was considered likely that any additional pharmacy workforce would have to be created from training novice recruits.

In Wales, the need to train and retain NHS hospital pharmacy staff was already well understood. Funding streams for salary costs of trainees on centrally-funded training programmes (student pharmacy technicians, summer vacation trainees on MPharm programmes, preregistration trainee pharmacists and diploma pharmacists) existed to support the main planks of entry to the workforce. These training programmes had been very successful in helping to maintain a steady in-flux of new recruits to the service. (69) Despite the acknowledged need to train new recruits, there was a concern about the training workload involved.

In summary, the amount of work-based training being delivered by hospital pharmacy departments was increasing in terms of the range of programmes, the number and type of trainees, and, because of the more formal nature of the training programmes, the administrative work required.

Capacity for vocational training in health services

The increased workload had led to anecdotal concerns that pharmacy trainers were becoming "trained-out" leading to low morale and motivation. Ultimately, there was a concern that capacity may be exceeded and the training may not have been sustainable. Much of the new training was unavoidable as it was mandatory to meet legal and regulatory requirements. It involved experienced staff who could otherwise have been contributing directly to service delivery and patient care. The Welsh chief pharmacists were concerned that they may not have sufficient capacity to deal with future training demands, which led them to identify the need for this research.

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The problems associated with training capacity were not confined to NHS hospital pharmacy services. In 2001, a report (70) by the Auditor General for Wales identified that there was a need for a marked increase in the numbers of health professional students and that this would be particularly problematic because of the lack of availability of practice placements in the health service. In 2002, a Welsh Assembly Government (WAG) working group, with representatives from some of the affected health professional groups (for example, nursing, occupational therapy, physiotherapy, radiography, dietetics, podiatry and speech and language therapy), was formed to consider the implications of a predicted increase in trainee numbers. (71) The focus of the working group initially was to consider the ability of education providers to accommodate increasing numbers of students. They recognised that higher education institutions (HEIs) could only increase their intakes onto courses if they could continue to meet the degree accreditation requirements of their respective professional bodies. Providers of undergraduate pharmacy programmes in England and USA had identified that classroom space, availability of sufficient academic staff and the ability to secure enough clinical placement time to accommodate additional trainees were all factors to consider when increasing intakes. (43, 45, 72)

As well as recognising the impact on HEIs, the WAG working group identified a number of barriers to increasing clinical placements in the NHS, including lack of physical resource within departments and insufficient staff to support the students. The shortage of clinical placements led to a recommendation that the design of clinical placement experience should be reviewed with a view to building capacity. (71)

In 2005, in response to the government pledge (7) to increase the number of qualified nurses in England by 20,000 and in recognition of the burden that this could place on the workplace, work had been undertaken to establish how key stakeholders made decisions about the number of learners that could be accommodated in clinical practice areas. (73) There was a lack of scientific evidence to back up allocations of students; numbers tended to be allocated based on historical patterns with no audit of the capacity to manage the trainees. The authors identified the need for a method to determine capacity in order to inform the allocation of learners into practice settings.

In summary, there was evidence that problems of training workload and capacity were not confined to NHS hospital pharmacy services in Wales. However, an understanding of the implications of an increase in training workload was lacking. Before embarking on in-depth empirical research into the issue, a preliminary investigation to provide a clearer understanding of the specific concerns about hospital pharmacy training workload and capacity in the NHS in Wales was undertaken and is described here.

Aim and objectives of the study

The aim of this exploratory study was to develop an understanding of the need for research into NHS hospital pharmacy training workload and capacity in Wales. The objectives of the study were to:

- identify the training workload and capacity issues that stakeholders had experienced or were concerned about;
- identify previous work that had been done to measure pharmacy trainer workload and/or capacity;
- obtain stakeholder opinion about the desired outcomes of research into this topic.

Method

Local Research Ethics Committee/Clinical Audit approval

An application was made to the Research and Development Department of Pontypridd & Rhondda NHS Trust for appropriate NHS Local Research Ethics Committee or Clinical Audit approval. The project was deemed not to require full NHS Local Research Ethics Committee approval. The project was registered with the Trust Clinical Audit department and notification that this had been approved was received on 24th April 2006 (Appendix 1).

Developing a research framework

When a new area of research is being developed, exploratory studies are useful for developing the research questions that need to be answered,

ensuring that there is a clear remit for the work. (48) The research questions that emerge from this first stage in the process are central to the research itself. Depending on the study structure, the research questions may change as the study progresses, particularly if, as was the case in this study, the research is unfolding as new discoveries are made. (48) In the present study, some of the questions that needed to be addressed had already been identified by the Welsh chief pharmacists but had not been fully developed or discussed in detail with the researcher. More detail was required in order to fully understand the scope and priorities of the project.

Study design

The model for development of study design proposed by Black at p27 (74) and summarised in Figure 2.1 was used as a framework for the design of this exploratory study.

State research questions	Select research approach	Select research method	Identify population and sample	Design methods
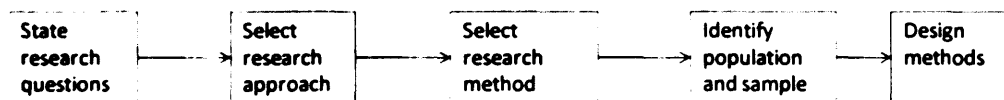
Figure 2.1   Stages of planning a study (adapted from Black, 1999) (74)

General research questions

Punch at p33 (48) had explained that general research questions guide thinking and help to organise research projects.   Issues that needed considering at this exploratory stage of the research included "Who wants the research?"; "Who is the research for/aimed at?"; "What are the general aims of the research?"; "What are the priorities and constraints?"; "What are the timescales?"; "What are the ethical issues?"; and "What resources are required?".   These questions were strategic in nature and were of a type referred to by Cohen et al at p75 (75) as orientating questions.

Specific research questions

Specific research questions follow from the general questions and direct the empirical procedures. (48) In this study the specific research questions were "What are the problems with training workload and capacity that have created the need for this research?"; "Has anything been done in this field before?" and "What are the desired outcomes of this study?".

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Research approach

The data that are to be collected usually dictate the research approach that is taken. (48) In this case, a qualitative approach was selected to be used for descriptive purposes.

Selection of research method

The research methods that were considered for this study were documentary analysis, questionnaires and interviews. Documentary analysis was discounted as no suitable source of documentation that would address the aims of the project was identified. Questionnaires were also discounted because pre-determined questionnaires may have been too narrow to have elicited the relevant information. (74, 75) Interviews were selected as the research method for this study. Reasons for this choice were that:

- discussion with stakeholders was thought necessary to achieve a sufficiently detailed understanding of the issues;
- the data collected would be directly related to the aims of the research;
- it was thought that key stakeholders, most of whom were known to the researcher, would be more likely to devote time to be interviewed, rather than completing a paper questionnaire; (76)
- invitations to take part in a one-to-one interview were thought likely to generate a good response rate;
- interviews were open-ended allowing for the use of prompts and probes to gain a deeper understanding of what was being said; (76)
- the number and types of questions being considered made it more amenable to an interview than a questionnaire;
- it was a relatively cost-effective way of gathering rich data within the financial and time constraints of the project.

In selecting interviews as the research method, the following disadvantages were acknowledged:

- they required a lot of time, particularly during transcription and analysis of the data; (76)
- the method was only suitable for use with relatively small numbers of interviewees and may have incurred travel and set up costs; (76)
- interviewing is a skill which needed to be practised – and not everyone would be comfortable in using; (77)

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- the interviewer may have had a tendency to seek out answers that supported their own ideas. (78)

The impact of some of these disadvantages was limited by selection of a number of key stakeholders who were considered likely to be able to represent the viewpoints of wider groups, meaning that rich data could be gained from a relatively small number of respondents.

Three types of research interview format were considered: structured, semi-structured and unstructured. (77) Generally, there is a continuum between these types of interview and so they are not absolutely distinct formats. Preliminary interviews of the type used in exploratory studies were generally at the unstructured end of the continuum. (78)

In this case, a semi-structured interview schedule was selected. The use of a semi-structured interview schedule provided a clear list of topics to be addressed, but the order that these were covered and the degree to which the respondent could elaborate and be probed was flexible to avoid potentially missing important topics. It was recognised that a disadvantage of the semi-structured interview format, in comparison with a structured format, was that it would generate a lot of data – not all of which would be relevant to the research area and which may be time-consuming to transcribe and analyse. (77)

A number of different interview formats were considered. Face-to-face interviews were selected in preference to telephone interviews because in this instance, the interviewees were accessible to the researcher and so it was feasible and cost-effective to do so. This format allowed for gathering of non-verbal information as well as what was actually being said and so helped the researcher to gain insight and understanding, as well as facts and figures. (76, 77)

Some interviews were conducted on a one-to-one basis and others were conducted as group interviews. The group interviews were arranged to take advantage of meetings that were taking place in the period of the study. This allowed data to be gathered from a wider range of respondents, was quicker and less intimidating than the one-to-one interviews and made good use of the available resource. However, disadvantages of group interviews were that

some participants may have withheld or moderated their views if they believed that they were contrary to others and some people may not have had the opportunity to express their views if others dominated the conversation. (77) The one-to-one interviews had the advantage that they were relatively easy for the interviewer to control and transcription was easier as there was only one person speaking at a time and much less speaking over each other. (77)

Research interviews could be conducted by a team of researchers or by one person. In this study, one researcher conducted all of the interviews which could have reduced any variation that would be introduced by having several interviewers. (78)

Population and sample

Stakeholders were selected using non-probability sampling either because they were considered experts in the field or because of their interest in and/or potential influence on the project. (77) Advantages of non-probability sampling were that:

- purposive sampling could be used to obtain the views of individuals with specific areas of expertise;
- convenience sampling could be used to take advantage of subgroup meetings that were taking place; (75)
- it would be less expensive than random sampling because ease of access could be taken into account in the sampling process.

Disadvantages of non-probability sampling were acknowledged as being that:

- it would be subject to a degree of bias – based on the selection;
- the results might not be generalisable;
- some important issues could be missed by not consulting widely enough.

Representatives from the NHS, the Welsh Assembly Government and academia were purposively selected (75) because of their role and involvement in the areas of investigation. Consideration was also given to whether there were any individuals who held strong opinions or had expressed an interest in the project area. All participants were assigned a Key Informant Interview code (e.g. KII01) which was used in the presentation of the report to preserve anonymity.

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Design of the method

An interview schedule (Appendix 2) was developed by reviewing the minutes of the Welsh chief pharmacists' committee and their workforce and education and training subgroups from 2001 to 2006 to identify any topics relating to pharmacy training workload and capacity in Wales. The minutes of the NHS pharmacy education and development committee (NHS PEDC)[12] were searched from 2001 to 2006 to reveal any similar topics from the rest of the UK. The researcher had some prior knowledge of training issues in Wales from their position as All Wales Education and Training Pharmacist and this was used to inform the development of the questionnaire. The topics that were identified from these sources were reviewed and developed into questions by the researcher. The interview schedule included a verbal introduction to explain the purpose of the interview, remind participants that the discussion was being audio-recorded and reassure them that their anonymity would be preserved. Following that, the interview schedule contained questions about the following topics:

- the participants' views about the need for, and importance of, the research;
- knowledge of any research in the field;
- examples of current problems with training capacity;
- examples of similar problems in other professions;
- suggestions for quantifying training workload and capacity;
- desired outcomes and priorities for the study.

The interview schedule contained open-ended "orientating questions" (75) to gather key informants' views about the research. This relatively unstructured format enabled the interviewer to use a series of questions as prompts to glean the key points from each interviewee whilst allowing the flexibility to probe more deeply into areas of interest that arose during the course of the discussion. The question sequencing was planned to ensure that there were some straightforward questions at the beginning of the interview to put the interviewee at ease, prior to moving on to more searching questions. (75) The

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[12] The NHS PEDC had representatives from every English Strategic Health Authority area and the Home countries. The stated purpose of the committee was to provide co-ordination in pharmacy education, development and training within National Health Service organisations primarily, but not exclusively, in secondary care.

questions were in chronological order covering previous problems, current issues and future priorities.

Interview pilot

An interview with the All Wales Research and Development Pharmacist was used to pilot the interview schedule and equipment. This provided an opportunity to practise the interview technique, test the questions and reflect on the process prior to use in further interviews. This post-holder was selected for the pilot interview because they were familiar with the research project but were not directly involved in the subject area and so were not considered to be a major stakeholder in the issues being discussed. This had the advantage that they would not limit any further data collection, but did mean that they were not as likely to be able to discuss the subject matter in depth. As this was the researcher's first attempt at conducting a research interview, the priority was to test out the interview process and practise the technique. The interview schedule was reviewed following the pilot to assess whether any changes were needed.

Information and consent

Potential participants were contacted by e-mail and provided with an information sheet (Appendix 3) about the research and a consent form (Appendix 4) to complete if they were willing to take part, thus ensuring that appropriate principles of research ethics (79) were addressed. Once consent had been obtained, suitable dates and venues for each interview were arranged.

Interview format

All of the one-to-one interviews were held at the interviewee's place of work. The interviewees were asked to arrange a room where they could be interviewed and be free of interruptions (including telephone calls). The group interviews were held in meeting rooms as agenda items as part of regular subgroup meetings.

Recording and analysis of the interview data

A framework for analysing qualitative data, described by Punch (48) was used as the basis of the analytic strategy for this study. Bell at p138, (78) had stated that a full content analysis was not necessary in preliminary interviews of the type used in the present study. The purpose of the interviews was to seek clues about which areas to explore, rather than identify points of detail.

The interviews were recorded on a Sanyo TRC_6300 dictating/transcribing micro-cassette recorder. The machine was connected to the mains power source during recording. The interviews were transcribed by a secretary who had transcription skills. Transcription of the data allowed for the verbal data to be recorded comprehensively. However, audio-taping did not capture body language or other non-verbal communication. (75)

The researcher listened to each recorded interview whilst reading the transcripts to check for any transcription errors and edit the final documents. This enabled familiarisation with the data. Individual words and phrases were marked with a highlighter pen to reduce the data into segments. The responses were reviewed question by question and highlighted words and phrases were grouped into categories and displayed in a mind map. Punch stated at p198 (78) that qualitative data can be displayed in a variety of different ways, including charts, networks and Venn diagrams, and that any that move the data analysis forward are appropriate. After a period of reflection, the researcher read the transcripts again to ensure that no key points had been omitted from the mind map. The mind maps were considered and used to draw conclusions about the data from the interviews which informed the planning of the next phase of the research.

Results and Discussion

Conduct of the Interviews

Pilot Interview

The pilot interview was conducted on 13th June 2006. No major problems with the questions or recording equipment arose. No changes were made to the interview schedule. However, the interviewer reflected on the process of conducting the interview and noted that their interview technique could be improved by concentrating on listening to the responses, rather than thinking about their next question and allowing longer pauses before prompting the interviewee or moving on to the next question.

Conduct of the key informant interviews

Six key informant interviews (4 individual and 2 groups) were conducted over a seven week period from 14 June 2006 – 28 July 2006. In total, views of 21 people were obtained and considered. Details of the dates, participants and duration of the interviews are given in Table 2.1.

Table 2.1   Date and duration of key informant interviews

Date	Role	Number of participants	Interview duration
14 June 06	Chief Pharmacist	1	1 hr 45 mins
10 July 06	Workforce subgroup[13]	4	1 hr 20 mins
12 July 06	Workforce planner, NLIAH[14]	1	50 mins
17 July 06	Pharmacy advisor, WAG[15]	1	1 hr 30 mins
20 July 06	Education subgroup[16]	13	1 hr 0 mins
26 July 06	Education contract manager, NLIAH	1	35 mins

All of the one-to-one interviews took place in the offices of the interviewees. In most cases, the interviewee did not share an office with other people.

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[13] Workforce subgroup of the Welsh chief pharmacists' committee
[14] National Leadership and Innovation Agency for Healthcare. This organisation performed the workforce planning and education commissioning functions for NHS Wales
[15] Welsh Assembly Government
[16] Education and training subgroup of the Welsh chief pharmacists' committee

However, in one case, the office was shared and no alternative venue had been booked. The interview was conducted in the presence of a colleague of the interviewee, which caused minor distractions including the colleague receiving a telephone call during the course of the interview.

The group interview with 4 people involved some useful interaction between group members but the interviewer was able to keep the discussion focused on the topics of discussion. In contrast, the group interview with 13 participants was less interactive. The format of the room was arranged so that the interviewer was at the front of the room, facing the participants who responded as if they were the audience in a presentation, rather than participants in a discussion. The interviewer led the discussion and there was very little discussion between participants. Also, because of the group size, the audio-recording was not very clear and in some cases it was difficult to identify which participant had spoken when listening to the recording. Whilst this was noted as a disadvantage of the method selected, it was justified on the grounds that it was a convenient and cost-effective way of gathering views from a wider group of participants.

Interview findings

The key informants provided a variety of insights and views into the need for the project, the areas requiring investigation and the desired outcomes of any work undertaken. Quotes, taken from the interview transcripts, illustrate issues that were raised. The responses were coded as being from Key Informant Interviewee 1 – 29[17], to avoid the comments being directly attributable to individual respondents.

Stakeholders' views about the need for the research

Several explanations were given for why the research was important. The respondents explained that the training workload had increased over recent times and that they did not expect the situation to improve without some type of intervention.

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[17] All members of the workforce and education and training subgroups were provided with information about the study, asked for their consent and assigned key informant interview codes prior to the meeting. As not all subgroup members attended the meeting 29 codes were assigned, but only 21 people participated in the interviews.

KII12 "We can't carry on as we are, can't keep on increasing the number of trainees without any additional resources."

KII04 "So many changes have come at the same time . . . you need to train people differently and possibly more extensively."

KII11 "Now you need to . . . show we're providing quality training."

KII24 "More is becoming mandatory, it has to be done."

These responses confirmed that there had been an increase in the volume and the type of training. In addition, there was pressure to prove that the training was of a particular standard. All of the respondents expressed a view that suggested they thought the research was necessary and timely.

Knowledge of any other work in this field within pharmacy settings

Some respondents provided information about other pharmacy research in the area under investigation.

KII01 "London . . . looked at the financial side of it (preregistration pharmacist training)."

KII05 "There was some work done in the late 80s, early 90s in the Oxford region on clinical pharmacy in terms of the workload requirements."

KII03 "Pat Oakley has done so much work on demand and supply that some of it should be useable without having to start again."

One informant highlighted a piece of work by Stapleton (80) in London that attempted to estimate the cost of preregistration pharmacist training. Another mentioned the work by Guest and Oakley (39) about workforce supply and demand. No other research into workload for pharmacy training was mentioned although work undertaken in Wales quantifying workload and capacity of dispensing activity was referred to. (81) These responses suggested that work-based NHS hospital pharmacy training workload was a relatively unexplored area that required further research activity.

Knowledge of similar issues experienced by other healthcare professions

Two respondents described problems that other healthcare professions had experienced and some work that had been undertaken as a result.

KII03 "They got to a position where they couldn't train any more dieticians because they just didn't have any more placements."

KII03   "In speech and language therapy, we are at the point where we can't increase the numbers because the clinical placements aren't there."

KII03   "They wanted 147 more health visitors trained this year, and normally we only train around 50 a year. We had to ask how many additional students can you take, and it came to around 20, so you have to say "No" you can't have those additional posts – we're at capacity."

KII29   "There wasn't even desk space for some students."

KII29   "We did a cost-benefit analysis of students on placements. Basically, first and second year students are a drain on the department; third years start to give back. If you add that up it works out about even."

The problems experienced by other professional groups described situations where the number of trainees that were needed to meet workforce demands exceeded capacity. This had limited the funding that was made available for training places and presumably slowed down service developments. These scenarios were very similar to the problem that the Welsh chief pharmacists anticipated and wanted to avoid.

Current problems with training workload and capacity

Problems that a high training workload had caused included situations where there was "stress", "pressure" and "burn-out".

KII21   "They (the trainers) get very stressed doing continuous training and it stops them doing their day job."

KII04   "The same people do virtually all the tutoring all the time. "A" they get burnt out and "B" their knowledge isn't up to date because they are never doing the work themselves."

KII14   "You may only have 2 or 3 people . . . use them all the time and they burn out."

KII17   "We rely so much on one particular person – we don't train enough people to fill in if that person isn't there."

KII08   "From my perspective we are already struggling to deliver what we have promised our staff and what the service needs."

KII01   "Whether it is new numbers or demonstrating the quality . . . that side of the see-saw is under huge pressure I think."

KII11   "There are times in the year that are very pressured."

Several respondents commented on the fact that the training burden tended to be borne by a relatively small number of individuals. Some acknowledged that some problems could be resolved to a degree if more people were involved. There was seasonal variation due to the nature of the training programmes highlighting the fact that problems were not continuous.

What level of detail was needed?

Stakeholders wanted a detailed analysis of workload and capacity for all types of training, not only for pharmacists, pharmacy technicians and pharmacy assistants but also for ancillary staff.

KII17 "You need to estimate the amount of trainer time for each trainee type."

KII06 "I think you do need to know which specialties are covered and how often."

KII04 "The time you spend actually filling in the paperwork, not just teaching or tutoring."

KII06 "Include admin and clerical staff and things like ECDL."

KII04 "If people are actually on a course, the time commitment that takes of them and potentially of the department."

They wanted the research to include all aspects of the training, including that that was undertaken away from the department because of the effect that staff absence (of trainers and trainees) would have on the service. A number of people had suggestions for how this information may be obtained.

KII01 "I think we should do a snap shot. I would want to avoid the issue of a league table because benchmarking can appear to be like that sometimes."

KII06 "Ask every member of staff what proportion of time they spend as a trainer."

KII01 "Be mechanistic. Say well actually, how much do you do?"

KII01 "Asking them (the trainers) things like when you are tutoring what don't you do, what is the impact."

One respondent noted that as well as taking time from the department, trainees also contributed work to the service and that an attempt should be made to measure their contribution in order to obtain a balanced perspective.

KII03 "What proportion of work do you get from the student, how much do they contribute to the work of the department and how much do they take from the work of the department."

Some respondents acknowledged that the perception of trainers to trainees may have an impact on how trainer workload was perceived and wanted a broader set of issues, such as training culture to be explored.

KII01 "I don't know whether somewhere in the exercise there might be an opportunity to look at educational culture within Trusts . . . what do tutors see training as being, a burden or actually a core element of their job and one to enjoy perhaps even?"

KII12 "They (the trainees) are a lot of work for 2 months and then they go away."

What were the desired outcomes?

Respondents had a number of suggestions about what they hoped to see as outcomes of the project. Some people wanted the information for management purposes such as costing and modelling of staffing.

KII19 "Develop a formula for the number of hours necessary to train a student."

KII03 "If you were able to come up with some sort of ratio, number of pre-regs to number of qualified pharmacists, or number of pre-regs to number of a certain grade of pharmacist."

KII05 "I think it is important that we do try and understand lots of the issues in as robust a way as we possibly can to perhaps build some modelling info."

KII04 "Some sort of modelling process where you can see if you have x number of people sitting an NVQ2/3, diploma or whatever chunk, that this is the amount of time, resource, whatever, to deliver one of those, and extrapolate just because you have 2 doesn't mean it doubles the resource."

Some wanted to develop an understanding of what good practice in training may involve.

KII04 "I think just generally innovative ways of delivering what we need to achieve."

KII05 "What numbers of bodies do you allocate to training and development?; 5 people who all devote a day a week to training, or one WTE?"

KII01 "Can you only have one student at a time, is it always one-to-one? Can we twin students in some way?"

KII29 "Some work around how placements are organised. Could it be done in a different way?"

Others wanted to be able to determine capacity to manage risk.

KII15 "An idea of what time is required for certain types of trainees – so that capacity can be based on more accurate data."

KII05 "I think the NHS has been really bad at defining safe limits of work which I guess is where we are trying to get to; the model line in the sand that we don't cross."

KII29 "What would be really helpful to us is to have that capacity data, because that would certainly help to inform any decision making we (NLIAH) do."

Some saw the project as possibly being used to gain some leverage in securing resource or political support for pharmacy workforce development.

KII10 "If we don't know how big the problem is then we have no way of presenting to the Assembly and ultimately to the politicians the scale of the problem and therefore aspiring to get the resources to resolve the problem."

KII29 "It's very difficult to quantify need and justify spending of NHS money."

KII14 "We all say we can't go on, it could actually give you an opportunity to demonstrate that, get some facts and figures."

It was also recognised that it would be useful for NHS hospital pharmacy managers and staff to have a better understanding of their own situation and be able to relate that to the other pharmacy departments in Wales.

KII01   "I think it will break a glass ceiling – that is, when you have a discussion with chief pharmacists, it is all about capacity and you can't get past that."

KII01   "I think it would be very nice just to share experience - it will have a beneficial effect."

One respondent noted that they had identified a wide range of issues and that it may not be possible to address all of them within the time and resource available, indicating that prioritisation would be necessary.

KII05   "It is a massive piece of work and not to underplay the sort of complexities and the social interactions within the pharmacy family."

KII05   "I think this is an ongoing piece of work isn't it? I think you will probably get close to validating assumptions that have been made."

Potential solutions to training capacity problems

Respondents were asked if they could suggest any potential solutions to problems with workload that should be investigated. A number of possibilities were suggested.

KII04   "I think it's being clear what people need to know."

KII01   "Certainly in some areas, the bar is set far higher than the qualification standard."

KII05   "I think that the teaching role is something that we need to embed more in everybody's job descriptions."

KII05   "I think the concept of teaching people on the job and the "sitting by Nelly" sort of approach that medicine and other professions use to utilise the workforce to share and cascade training."

KII01   "It may well be two Trusts working together can support more diploma pharmacists than two Trusts working apart."

KII01   "Change the attitude of the trainers to cope with more."

KII08   "As well as looking at what we perceive to be our capacity, we need to look at different ways of doing things."

KII03   "The University of Glamorgan has got those simulation labs, set up like wards – it is one way of getting round nurse clinical placement problems."

A number of suggestions indicated that training practices needed to be reviewed to ensure good use was made of the existing capacity. Some changes may not have required significant additional resource to achieve, for example implementation of a periodic review of training to ensure that it was

all relevant. It may have been a long time since the content of some training programmes had been updated. Involvement of more people in training may have helped with some of the issues of trainer burn-out that were mentioned and may not have required significant additional resource. The use of additional new technologies was also suggested as a way of trainees accessing training without placing additional demands on the workplace.

Summary of key findings

This study aimed to develop an understanding of the need for research into NHS hospital pharmacy workload and capacity in Wales. It was identified that there had been an increase in the volume and type of training that was being delivered by NHS hospital pharmacy services in Wales that had placed pressure on services. There was concern that a further increase in training demand would exceed capacity.

Discussion of key findings

The first objective of the study, to identify the workload and capacity issues that stakeholders were aware of, was achieved. Stakeholders were aware of a number of problems with pharmacy training workload and capacity that were based on their experiences of events within their own spheres of practice. The problems that were identified were not unique to hospital pharmacy services in the NHS in Wales. Other healthcare professional groups had experienced capacity problems resulting in difficulties in accommodating additional trainees. This was a problem that the NHS hospital pharmacy representatives in Wales wanted to avoid.

The second objective of the study was to identify previous work that had been done to measure training workload and/or capacity. This research identified one study that measured workload for preregistration trainee pharmacists. (80) This work was considered when developing the next stage of the research.

The third objective was to obtain opinions about the desired outcomes of the study. The stakeholders had identified a number of issues that could be explored in the course of this research, but it was recognised that some prioritisation would be necessary. The outcomes that were identified included:

    1. measurement of the workload involved in training;

2. developing an understanding of the capacity of the service to accommodate training;

3. identifying training practices that could help to manage training workload;

4. understanding the culture of training in NHS hospital pharmacy and how this related to workload;

5. investigation of the use of the newer developments in training (for example, simulation laboratories) to understand their potential value.

The work would be valuable and have a number of potential uses including:

- providing data to estimate the cost of training;
- enabling modelling of training to predict workload in different scenarios;
- defining safe limits of training work;
- informing the development of changes to training practice.

Discussion of the method selected

This study succeeded in obtaining the views of key stakeholders who were able to provide detailed information and insights about their views of the project from a number of different perspectives. The purposive selection of individuals based on their interest in, and potential influence on, the project was important to the success of this approach. The majority of the respondents had senior posts within their organisations or were considered the "expert" on the topic they were being asked to discuss. As a result the respondents not only had knowledge of the issues that the project was attempting to address but were able to provide useful strategic insight and analysis. The selection of a broader, random sample of participants may have captured more examples of problems with workload, but may have missed some of the strategic viewpoints.

Use of a semi-structured interview schedule was appropriate in this instance as it allowed for the capture of rich data about the issues, which respondents were able to discuss freely and sometimes at length. The semi-structured format allowed the interviewer to ensure that the key points of the interview were covered, although not in a specified order. As the researcher was not an experienced interviewer, it was helpful to have a checklist to refer to if the conversation dried up, or was moving too far away from the subject area.

Research priorities

This preliminary study confirmed that in order to understand the impact of an increasing number of pharmacy trainees on NHS hospital pharmacy services in Wales, further research was required.

In order to make the best use of available resource, the next stage of this study was focussed on investigating training workload and relating this to training capacity.

There was a range of programmes and a diverse population of pharmacy services in the NHS hospital service in Wales. The situation was complex and dynamic as patterns of training varied from year to year, training programmes changed, funding streams altered and organisations within the target population underwent various degrees of restructuring. As an initial step, there was a need to map the field, to gain as comprehensive a picture as possible.

Conclusions

This study enabled the researcher to develop an understanding of the need for research into NHS hospital pharmacy training workload and capacity in Wales. Use of interviews to obtain key stakeholders' opinion enabled development of a deeper understanding of the issues. This process allowed the researcher to plan research to meet these needs.

Chapter 3 describes work undertaken to estimate training workload and capacity in NHS hospital pharmacy services in Wales and provides a systematic description of the field of study.

Chapter 3

Measuring pharmacy training workload and capacity

Introduction

The education and training subgroup of the Welsh chief pharmacists' committee had been asked to investigate training workload for hospital pharmacy services in the NHS in Wales. (47) Using an unfolding research structure, (48) key informant interviews (described in Chapter 2) had identified that research was necessary to estimate the workload and capacity for NHS hospital pharmacy training in Wales.

Chapter outline

This chapter begins with a review of the literature on measurement of training workload and capacity to identify any previous work in the area. The process of developing and using a tool to estimate training workload and capacity of NHS hospital pharmacy services in Wales is then described. The results of this are presented and the chapter concludes with a discussion about the findings, reflections on the process and recommendations for further work.

Literature review of training measurement techniques

A search of the English language literature on healthcare and education was performed to identify methods used to measure training workload and capacity. The journal databases British Educational Index (BREI) (1975-2006); Educational Resources Information Center (ERIC) (1966-2006); SCOPUS (including MEDLINE) (1996–2006); EMBASE (1996–2006); and Web of Science (1970-2006) were searched using combinations of the following search terms:

- pharmacist, preregistration, pharmacy technician; pharmac*,
- health*, medicine, hospital, secondary care, national health service;
- teacher, tutor, preceptor, mentor, trainer, faculty;
- trainee, apprentice, preceptee, novice;
- professional/vocational/on-the-job/work-based and (education/training);
- measure*/quantify*/estimate*/evaluat* and (workload/capacity);
- supply/demand/planning and workforce.

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The search terms were further combined to focus the search results where necessary, for example; "pharmac* and workforce and (training adj capacity)"; "measure* and training and workload". References lists, cited by authors of relevant articles were used to identify other work in the field.

The websites of the Royal Pharmaceutical Society of Great Britain, NHS Wales, the Guild of Healthcare Pharmacists, United Kingdom Clinical Pharmacy Association and the University of Manchester Workforce Academy were searched for conference reports and other relevant publications.

Training evaluation

A major contributor to the literature on training evaluation was Kirkpatrick (82) who developed a four-stage model for organisations to use to evaluate training programmes. The four stages (levels) were Level 1: Reaction (did the participants like the training?); Level 2: Learning (what did the participant gain from the training?); Level 3: Behaviour (have the participants changed their practice?); and Level 4: Results (what is the impact of the training on the organisation?). Kirkpatrick's model had been adapted and used in various settings, although it had been criticised for not providing tangible evidence of benefits. (83, 84) In particular, meaningful data about the impact of the training on organisations proved difficult to measure. Dixon (85) conducted a review of company practices and found that even best practice companies only did selective level 3 and 4 evaluations as it was impractical to do them for every course.

As approaches to training evaluation developed it was suggested that the type of economic analysis that occurred in manufacturing industries (86, 87) should be used in service industries such as healthcare and education, (88-90) although it was acknowledged that it was more difficult because of the degree of variance in their customers and activities. (91) Despite the difficulties, quantitative analysis of training programmes had been attempted. Some researchers advocated a method where all of the direct and indirect costs of running a training programme were identified in order to provide a detailed breakdown of costs. (92, 93) Others suggested that the balance between expenditure on training and benefit to the organisation should be evaluated to provide information about the "return on investment" (ROI). (94, 95) Phillips suggested an approach where "return on investment" was added to

Kirkpatrick's four stage model to create a fifth level. (96, 97) This five-level approach enabled an assessment of the monetary value of training to be made. However, Phillips (96) noted that some measures should not be converted to monetary values but should be considered as intangible benefits that need to be factored in.

Measurement of training workload in healthcare

Attempts to cost some elements of pharmacy services had been made to justify service provision at times when cuts were threatened or other changes planned. (98, 99) However, these analyses had related to direct service delivery rather than indirect costs, such as staff training.

In response to increases in the numbers of healthcare trainees both in the UK and USA, various strategies had emerged that attempted to measure training workload. (71, 73, 100) Some groups (101-109) had taken the contribution that the trainee made to service delivery into account. In contrast, others measured training workload in isolation of other factors. (110) In the USA, a new requirement for all PharmD candidates to undergo Advanced Practice Placement Experiences (APPEs) was introduced resulting in more trainees needing placement time in hospitals. As a consequence, universities had to negotiate additional placements for their students. Some placement coordinators had attempted to develop a greater understanding of the impact of the training on the workplace to help inform discussions with hospitals about payment or other incentives for accepting trainees. (111, 112)

A small number of studies had attempted to determine the full costs of pharmacy training. (80, 113, 114) In the USA, Harralson (114) used a 17-item questionnaire to collect data from institutions that offered Advanced Pharmacy Practice Experiences (APPEs). Information was gathered about the support and input required for all aspects of the programme and used to calculate the cost of providing training. A similar approach was used by Stapleton in the NHS in London to identify all the activities associated with preregistration pharmacist training in NHS hospitals and calculate costs for each activity according to time spent by the various trainers. (80)

A holistic approach was developed by one team where the learning impact of clerkship activities was compared with the associated training costs. (115,

116) They developed an algorithm that listed each activity in the programme and ranked the activity in terms of site impact and learning opportunity. This approach was of interest because it not only calculated the costs of training, but related it to benefit and so could help inform decisions when reviewing programmes. In particular, they stated that the information would be "sufficient to guide revision or justify deletion of the activity from the clerkship", which could be useful when considering ways of addressing capacity problems.

Measurement of training capacity in healthcare

Information about workload is likely to be of more use if it is related to capacity. Capacity planning is routine in the production and manufacturing industries, (117) but had not been used as extensively in the service industries. Capacity measures had been developed for some elements of health services, (118-121) for example, to provide guidance on safe working limits and had contributed to raising standards of practice. This approach had been possible for discrete and reproducible functions of pharmacy services (81, 122-128) but not for training. Analysis of capacity for clinical training of nursing placements was found to be based on historical patterns and was mainly done at a local level by those who were directly involved. (73) Complex and interrelated factors such as the skill level of the work, role of the trainees, organisation size and workforce skill mix all need to be taken into account when trying to measure training capacity.

In summary, training measurement studies had traditionally focussed on outcomes such as learner satisfaction ratings and completion rates. In cases where quantitative analysis of training workload had been attempted, all of the elements of the training programme had been identified so that each component could be measured individually. In order to measure training workload in this study, it would be necessary to undertake a full and detailed analysis of each type of training that was taking place. No methods to measure work-based training capacity were identified and so capacity estimates would need to be based on local intelligence.

Context for this study

Work-based training within Welsh NHS hospital pharmacy services

NHS hospital pharmacy training in Wales could be categorised into training for four discrete groups:

1. Cardiff University postgraduate diploma pharmacist training;
2. training for novice pharmacy staff to meet registration requirements;
3. all other work-based training for pharmacy staff;
4. training delivered to external staff/organisations.

Training workload for all of these groups needed to be quantified. With the exception of Stapleton's work on preregistration trainee pharmacists, (80) no examples of measurement of training workload for these groups had been identified in the literature or through the discussions with stakeholders. The main areas of concern to the Welsh chief pharmacists were the training delivered for novice staff and diploma pharmacists because they were on formal training programmes that were a prerequisite for progression to "career-grade" posts. The workforce demands could only be met if there was a source of supply to these posts.

1   Cardiff University postgraduate diploma pharmacist training

The Cardiff University postgraduate diploma in clinical pharmacy course was undertaken by a majority[18] of recently qualified pharmacists in NHS hospitals in Wales. The diploma pharmacists were registered professionals in their own right. When not undergoing training they were working as pharmacists and contributing to service delivery. A description of the diploma programme was provided in Chapter 2.

2   Training for novice pharmacy staff to meet registration requirements

There were three groups of novice hospital pharmacy staff who underwent formal training to meet registration requirements in the NHS in Wales. These

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[18] The Welsh Assembly Government provided funding for course fees and 50% of salary costs for approximately 30 pharmacists to undertake the Cardiff University diploma programme annually. A small number of employers funded other qualified pharmacists to undertake postgraduate diploma programmes with other HEIs. In addition, some posts were offered without the diploma. The total number of these locally funded posts was usually fewer than 10 across the whole of Wales and so the majority of recently qualified pharmacists were on the Cardiff University diploma programme.

were preregistration trainee pharmacists, student pharmacy technicians and pharmacy assistants on NVQ programmes. A description of the training programmes for these three groups was provided in Chapter 2.

3   All other work-based training for pharmacy staff

There were several mandatory Trust-wide training programmes that all NHS staff had to complete such as "child protection", "lifting and handling" and "fire safety". A number of continuing education programmes and courses existed for qualified hospital pharmacy staff in Wales. The Welsh Centre for Pharmacy Professional Education (WCPPE) provided a programme of short courses and stand alone study days and there was access to programmes from a range of other providers. As well as the time requirement for staff to attend courses, when they would otherwise have been contributing to service delivery, some programmes required participants to perform work-based activities which required support from other qualified staff acting in the role of work-based trainers and assessors.

4   Training delivered to external staff/organisations

Hospital pharmacies provided training for other staff groups and organisations. The types of training offered included induction training for junior doctors, study days for nurses and teaching on external courses, such as supplementary prescribing courses at Higher Education Institutions and study days for the Cardiff University diploma programme. These programmes required the time of qualified pharmacy staff to deliver the training.

Trends in trainee numbers in the NHS in Wales

Data on the number of trainees at each site were held by the All Wales Education and Training Pharmacist for financial management and monitoring purposes. The number of pharmacy trainees (diploma pharmacists, preregistration trainee pharmacists and student pharmacy technicians[19]) had increased over the preceding five years and is shown in Table 3.1 (source – data on file[20]). Although funding for salary costs and course fees for trainee posts had been increasing, no additional funding for training infrastructure was

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[19] Although there was thought to be a high demand for NVQ level 2 training at the time of this study, no data were held about the number of pharmacy assistants undergoing training.

[20] Data held in the office of the All Wales Education and Training Pharmacist.

provided by the Welsh Assembly Government. Additional training workload had been absorbed by the pharmacy departments.

Table 3.1   Number of NHS hospital pharmacy trainees in Wales in each cohort (2000-2006)

Intake year	2000	2001	2002	2003	2004	2005	2006
Diploma pharmacists	19	11	21	25	26	25	31
Preregistration trainee pharmacists	0[21]	32	36.5	39	39.5	36	38
Student pharmacy technicians	3	12	0	24	24	35	32
Total	22	55	57.5	88	89.5	96	101

Allocation of funding for training posts

The overall level of central funding for hospital pharmacy trainees was decided by the Welsh Assembly Government. However, the division of funding was left for the NHS hospital pharmacy employers to agree amongst themselves. In Wales, an allocation committee of the Welsh chief pharmacists' committee (comprising the chair, vice chair, secretary and past chair of the committee, plus the All Wales Education and Training Pharmacist) decided how funds should be shared. Each training site submitted a request for trainee numbers to the All Wales Education and Training Pharmacist who prepared a plan for division of the overall allocation for consideration by the committee. The committee considered the requests, taking factors such as geographical spread, range of trainee type, organisation size and previous training history into account. Sites were never allocated more trainees than they had requested. In the absence of any other information, the number of trainees requested was taken as an indication of the training capacity available at each site. Although the funding allocation was determined centrally, the actual number of trainees in post was determined by the successful recruitment and retention of candidates.

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[21] This was the "fallow year" where there were very few graduates from UK schools of pharmacy due to the transition from a three-year to a four-year degree. The low number of preregistraton trainee pharmacists resulted in a low intake onto the diploma programme the following year. In 2001 the unused diploma funding was used to pay for student pharmacy technician training posts.

Aims and objectives of the study

The key informant interviews had indicated that this research needed to estimate the total training workload undertaken by NHS hospital pharmacy departments in Wales and relate this to capacity in an attempt to predict what impact any future increases in trainee numbers would have on the service. In order to estimate training workload it was necessary to identify and estimate time spent on all the elements of the training process. The literature review had not revealed any examples of how to estimate training capacity other than by obtaining opinion from those involved.

The aim of this study was to estimate training workload and capacity in NHS hospital pharmacy services in Wales.

The objectives of the study were to:

o estimate the training workload to deliver:

- Cardiff University postgraduate diploma pharmacist training;
- training for novice pharmacy staff to meet registration requirements;
- all other work-based training for pharmacy staff;
- training delivered to external staff/organisations.

o develop an understanding of the training capacity of the service in relation to training workload.

Method

Local Research Ethics Committee/Clinical Audit approval

The project was registered with the Pontypridd & Rhondda NHS Trust Clinical Audit department. Notification of appropriate registration had been received on 24th April 2006 (Appendix 1).

Study design

A model proposed by Black at p27 (74) and summarised in Figure 3.1 was used as a framework to design the research.

| State research questions | Select research approach | Select research method | Identify population and sample | Design methods |
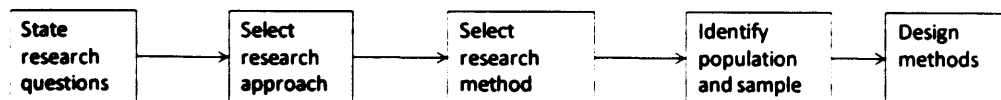
Figure 3.1   Stages of planning a study (adapted from Black, 1999) (74)

The first consideration was the purpose the research leading to the development of the research questions. In this case, the aim of the research was to estimate training workload and capacity in NHS hospital pharmacy services in Wales. As this was a new area of research it needed to be descriptive (focussing on what was the case), rather than explanatory (focussing on why) to provide a systematic description of the field.

Research questions

The research questions were "what training was taking place?" and then for each training programme, "what components were included in the programme?", "how long did each component of the training take?", "how much time was spent by trainers on training in each component of the training programme?". The final research question was "How did the overall workload relate to training capacity?".

Research approach

The choice of research approach is influenced by whether the data that need to be generated are in the form of numbers (quantitative) or not in the form of numbers (qualitative). (48) Generally, quantitative approaches may involve using experimental, quasi-experimental or non-experimental research strategies. (48) The tendency is for quantitative approaches to be used to test

hypotheses, whereas qualitative approaches are more often used for description and hypothesis generation. In this study, the questions would generate mainly quantitative data for descriptive purposes. Punch at p236 (48) advocates a pragmatic approach to developing research methods, based on consideration of what the research is trying to find out, rather than being fixed in research paradigms. In this study, the research approach used was a quantitative, non-experimental approach used for descriptive purposes.

Research method

The research methods that were considered were structured observation (by participants or non-participants), questionnaires (self-completion or administered by interview) and documentary analysis. (48) No sources of documentation that would contain the relevant data were identified and so documentary analysis was discounted as a possible method.

Structured observation would have required the observer to assign events into previously defined categories by recording and coding each activity. (75) The observation could either be undertaken by a third party (non-participant observation) or by someone involved in the process (participant observation). Non-participant observation may have been an objective way of recording the events, although the observers may not have understood observed events sufficiently to record them accurately. There would also have been a risk of bias from the Hawthorne effect in that the presence of any observer may have influenced events for the period of observation, leading to inaccuracies in the results. (75) It would have been very costly in terms of the time and travel costs for an external observer to visit each site and record training activity and so this method was discounted.

Participant observation could have enabled capture of a large volume of data to be recorded by the trainers and trainees at each site. However, it would have required a long period of sampling to enable the training activity to be recorded throughout all stages of the programme. There would be a risk of low response rates and/or incomplete data, especially if the workload involved in recording was high. There was the possibility of an element of subjectivity and bias as some trainers may over or under report in order to demonstrate a particular point (e.g. high workload or efficient behaviours). (75) There was

also a concern that the use of this method would increase training workload, which given it was the topic of this study, was already thought to be problematic. As a result participant observation was discounted as a possible method for this study.

Questionnaires were found to have a number of advantages over other methods for the purposes of this study:

- they could provide information about practices over a period of time; (129, 130)
- they were a relatively cost-effective and quick way of gathering quantitative data from a large number of people; (129)
- the use of mainly closed questions would generate more consistent responses which would aid analysis; (129)
- free-text boxes could be used to avoid limiting responses in areas where the possible answers were unknown;
- structured questionnaires were more suitable than semi-structured and unstructured questionnaires for collection of quantitative data.

As a result, structured questionnaires including a small number of free-text items were selected as the data collection tool for this study. The questionnaire could have been a self-completion questionnaire or been administered by interview. Advantages and disadvantages of interviews were discussed in Chapter 2. Advantages of self-completion questionnaires were noted to be that they:

- provided the respondents with an opportunity to locate relevant information, either by reference to in-house documents or by consultation with other personnel;
- allowed the respondents the opportunity to complete the questionnaire when it suited them.

However, it was also noted that they:

- may have had a low response rate (especially if they were sent "cold");
- did not provide an opportunity to clarify misunderstandings or difficulties in interpreting the questions; (129)
- may have generated responses containing missing or inaccurate data;
- placed a high cognitive burden on the respondent. (130)

Self-completion questionnaires, distributed to respondents by post were selected as the research method for this study. A number of steps were planned to limit the impact of the disadvantages that had been noted. This included providing information to respondents and their managers about the study; providing opportunities for respondents to clarify any queries about the questions in the form of meetings, e-mails and telephone contact and selection of one main person at each site to facilitate communication. Whist the level of one-to-one contact with individual respondents was useful in clarifying any points about the study it is acknowledged that individualised contact with respondents may have introduced an element of bias.

Population

In research, sampling is undertaken in order to make generalisations about the wider population on the basis of a subgroup. (48, 131) The larger the sample the more likely it is that the results will be representative of the wider population. In this study the main limitation on sample size was the resource dedicated to the research. There were thirteen NHS hospital Trusts in Wales and all were included in the study as it was feasible to do so, enabling a complete cross-section of the practices that existed to be analysed. This removed the risk of any bias as a result of the selection of the sample.

The pharmacy education and training leads were selected to be the main contact points for data collection. These individuals were identified through their membership of the education and training subgroup of the Welsh chief pharmacists' committee. They were selected because, as members of the subgroup, they were already aware of the background and need for the research, and so were engaged in the process. In addition, they were considered likely to be aware of the approach to training used at their own organisations and so be able to provide the relevant information. Fifteen pharmacy education and training leads were identified.

It was known that some of the pharmacy education and training leads had a Trust-wide remit, whereas in some Trusts responsibility for training was shared between two hospital pharmacies, each with their own lead. Therefore each lead was asked to confirm on which organisations' behalf they would be responding. Most leads (n=9) said that they would provide one Trust-wide

response. Four leads (two each from Bro Morgannwg and Carmarthenshire) said that they would provide a response on behalf of their hospital, not the wider Trust. Two leads had Trust-wide remit (Gwent and Swansea) but opted to provide two separate responses for the two hospital pharmacies in their Trusts. As a result, the term "training site" was selected to encompass all seventeen participants in the study, which included nine Trust-wide and eight individual hospital pharmacy "training sites".

Design of study method

Questionnaire development, piloting and revision was undertaken prior to the use of the final questionnaire with pharmacy education and training leads.

1. Questionnaire development

The feedback from stakeholders described in Chapter 2 indicated that this study should attempt to estimate all the training that was being delivered by NHS hospital pharmacy departments in Wales. Information from the literature informed the approach to developing questions about training measurement. The development of the questionnaire involved creating a list of all training that was being delivered, identifying relevant sources of information that described each training programme in depth and creating questions to seek information about the training workload involved in each activity. The researcher's own in-depth knowledge of work-based NHS hospital pharmacy training in Wales was used to develop questions about aspects of training workload which were not apparent from the literature or course manuals.

Questions about the formal programmes for diploma pharmacists and novice trainees were developed using the relevant course materials. (61, 65, 132, 133) There was no pre-defined list of all the types of training that were delivered for qualified pharmacy staff. In order to create a list for inclusion in the questionnaire, convenience sampling was used to select two members of the education and training subgroup for their input. (48) The people concerned were from large hospitals which were thought likely to be providing a wide-range of in-house training and therefore would be able to produce a comprehensive list. They were asked to list all types of in-house training that took place in their departments and estimate the amount of time, per trainee, that each programme required, along with a rationale for each estimate. The

questionnaire asked respondents if they agreed with the estimates of training workload and if not, provide their own estimates. Free-text boxes were used to gather data about training that was delivered to external organisations to avoid limiting potential responses.

The questionnaire included nine different sections relating to different training programmes. Each section was printed on different coloured paper. The sections were individually stapled and then held together using treasury tags. This enabled the questionnaire to be physically separated into the different sections for distribution to, and completion by, several different people at each training site. This was in recognition of the fact that responsibilities for different training programmes may have been held by different individuals. The education and training lead was asked to act as the main point of communication and distribution of the questionnaire for their training site.

Respondents were asked to estimate their workload in relation to their training capacity. Capacity had been noted to be an elusive concept (87, 122) and so the following explanation of capacity, adapted from Ragan (87) was provided: *"Capacity can be described as being a measure of the amount of work a system can perform (as opposed to workload which describes what is actually being done)"*. Respondents were asked consider how their current training workload related to their capacity and to express this value as a percentage (so if working at full capacity, the value would be 100%). Where appropriate, respondents could indicate that workload had exceeded capacity, by the use of values greater than 100%. Workload that was estimated to be twice the available capacity would be shown as 200%. They were also asked to express their workload in relation to capacity in words and to describe situations where capacity had been exceeded using free-text boxes.

2. Questionnaire pilot

The questionnaire was piloted in three hospitals in the Oxford region of the NHS to test whether it would collect meaningful data. This region was selected for this pilot because it was one of only two regions in England that offered the Cardiff University postgraduate diploma in clinical pharmacy programme. A section of the questionnaire focussed on this programme and could only be completed by someone with experience of the programme. As well as providing the same diploma programme as the NHS hospitals in

Wales, the NHS hospitals in Oxford region provided the same novice training programmes (preregistration pharmacist training, student pharmacy technician training and pharmacy assistant training) as the NHS in Wales and therefore were able to complete the whole questionnaire. The NHS hospitals in Oxford could be exposed to the questionnaire without prejudicing the all Wales data.

Pilot recipients were identified through the regional education and training lead for the Oxford region. Pilot questionnaires (Appendix 5) were sent to the pilot recipients on 17th August 2006 with a requested return date of 15th September 2006. In addition to the questionnaire, a covering letter and sheet of supplementary questions was sent to the recipients to obtain feedback about their experience of completing the questionnaire (Appendix 6).

3. Revision of pilot questionnaire

Analysis of the answers to the pilot questionnaire was undertaken to inform a review of the design of the questionnaire. Feedback from recipients of the pilot questionnaire was used to improve the process for distribution of the questionnaire and communication about the work involved.

Distribution of the final version of the questionnaire

The revised questionnaire (Appendix 7) was distributed by post to all NHS hospital pharmacy education and training leads in Wales in October 2006. The questionnaire sought data about staff in post on 30th September 2006 and retrospective data on training by hospital pharmacy departments in Wales during the 2005/6 academic year. A fixed date was chosen for data on staff in post to ensure there was no variation in responses due to seasonal changes in recruitment or training patterns. The date was selected because the trainee appointment process was scheduled to have been completed by this date and so information about the number of trainees in the 2006/7 cohort would be available. In addition, because the date was recent, the information was likely to be current and available. The use of retrospective rather than prospective data about training programmes was because retrospective data were already available, whereas prospective data about a complete training programme could have taken up to 12 months to collect.

Respondents were asked to attend a meeting of the education and training subgroup on 16th November 2006 before attempting completion of the

questionnaire. This meeting provided the opportunity for further explanation and clarification of any points relating to the data collection process. Eleven pharmacy education and training leads representing thirteen training sites out of the possible seventeen attended the meeting. A briefing sheet of points that were discussed and clarified at the meeting was circulated to all respondents after the meeting (Appendix 8). The deadline for responses to the questionnaire was 16th December 2006. Respondents who had not returned their questionnaires by the deadline were followed up by telephone.

Presentation of data

In this descriptive study of one group, descriptive statistics were used to aid presentation of data. Means and ranges were provided to illustrate the variability of the responses.

Verification of questionnaire responses

A meeting of the education and training subgroup in January 2007 was used to verify responses to the questionnaire by discussing outlying figures and other anomalies in the preliminary results with respondents. Nine education and training leads representing ten training sites were present at the meeting. At the meeting, respondents were handed back their questionnaires and a presentation about the preliminary results was given. The respondents were then offered the opportunity to seek clarification, discuss conventions that had been used by colleagues and where necessary, change their estimates of training workload in the questionnaire. The process for reviewing and updating results is summarised in Figure 3.2. Respondents who were not at the meeting (n=6) were sent the presentation by e-mail and then contacted by telephone to discuss whether they wanted to amend their responses.

Respondents complete and return their questionnaires → Data anonymised and entered into spreadsheet. Charts created for presentation of preliminary results → Respondents attend meeting where their questionnaires are returned and they receive a presentation about the findings. → Points requiring clarification are discussed and documented → Respondents are offered the opportunity to amend their responses prior to handing back their questionnaires

Figure 3.2   Process used to verify responses to the questionnaire

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Results

Response to pilot questionnaire

Three pilot questionnaires were sent to education and training lead pharmacists in NHS hospitals in the Oxford region. Of these:

- one response was completed by hand and returned in the post by the deadline requested. The supplementary sheet of questions about the experience of completing the questionnaire was included with the response.

No further responses were received by the requested deadline.

- the second recipient was followed up, resulting in the return of the questionnaire which was completed electronically. No supplementary information sheet was attached.

- the third recipient was followed up. The recipient replied that they had completed and posted it some days earlier and had not kept a copy. They provided feedback in an e-mail on the process of completing the questionnaire but were not willing to complete a second form. The posted copy did not arrive.

In summary, after follow up, two completed questionnaires and one supplementary information sheet were received. Feedback from respondents indicated that there were no objections to any of the questions, no major topics were omitted and the layout was reported to be clear. The answers to the pilot questionnaire were reviewed to assess whether the questions had elicited the responses that were expected and would be useful. Feedback from the pilot led to amendments to the distribution process and content. A summary of changes to the distribution process is shown in Table 3.2 and changes to the content are shown in Table 3.3.

Table 3.2   Changes to the distribution process as a result of the pilot questionnaire

Comment/observation	Action taken
The questionnaire took between 1.5 to 2 hours to complete.	A covering letter, copied to the chief pharmacist at each site, alerted the respondent to the size of the task and the need to plan time in the diary in order to complete their response.
It was clear that respondents had involved other members of staff within their organisations to provide some information about programmes that they were not directly involved with.	The questionnaire was created in several sections which could be separated, in order that certain components could be passed on to relevant individuals for completion, before being gathered back together for return.
The questions were clear, although it was necessary to read the instructions closely to understand what was required.	A meeting was organised to brief participants about the project and respondents were asked to attend this prior to attempting to complete the questionnaire. The questionnaire was circulated prior to the meeting so that they had a chance to identify any potential questions or problems with data collection so that these could be discussed with the whole group.
There was uncertainty about what was meant by the term "trainer time" that resulted in one of the respondents contacting the researcher for more information prior to completion of the questionnaire.	A briefing sheet of definitions and other conventions to do with data collection were defined and distributed in writing (see Appendix 8).
Comments were made about the difficulty in estimating training workload as an average time per week as it varied at different stages and with different students. It was suggested that the responses may be an underestimate of the real time spent.	It was recognised that it is difficult to produce an accurate estimate of training workload. Alternative ways to estimate training workload were considered but these also had disadvantages. No change was made to the questionnaire. The limitations of this approach were noted.
One completed pilot questionnaire was lost in the post	The covering letter reminded recipients to photocopy their completed questionnaires prior to posting in case they were lost.

Table 3.3   Changes to the content of the questionnaire as a result of the pilot questionnaire

Section	Changes made
Two	The columns referring to the previous workforce plans were removed. Respondents had managed to successfully complete the information about staff in post. It was thought unnecessarily complicated to ask respondents to provide this information by reference back to earlier workforce plans that they may not have ready access to.
Three	The questions about the medicines information and aseptic pharmacy clerkships were added to the same table as the rest of the diploma clerkships to standardise data collection. An extra page asking sites to confirm which modules of the diploma had been attempted was added to help provide a better understanding of the organisation of the training at each site and aid verification of the results.
Five	Additional columns were added to separate information in the table requesting information of those working towards and completing the NVQ level 3 units to indicate which units were done by first years and which by second year trainees. A rota for first and second year trainees was requested. This helped to provide a better understanding of the training provided at each site and aid verification of the results.
Six	A question about the time spent by NVQ level 2 candidates in various sections was added – for both rotational and non-rotational staff. A new question about the number of NVQ level 2 candidates was added. This helped to provide a better understanding of the training provided at each site and aid verification of the results.

Questionnaire response rate

Of the seventeen questionnaires that were sent out, two were returned by the deadline of 16th December 2006 giving an initial response rate of 11.8%. Telephone follow up with non-respondents led to all further questionnaires being returned by 9th January 2007, giving a final response rate of 100%.

Questionnaire responses

SECTION ONE: CONTACT DETAILS

There were thirteen NHS Trusts in Wales that provided NHS hospital pharmacy services. The names of training sites and the NHS Trusts they related to are shown in Table 3.4. A map of Wales showing the cities and towns where the NHS hospitals are located is included as Appendix 9. Each training site was assigned a code number from 1 to 17 to preserve anonymity. The code numbers, rather than site names, are used in the presentation of the results.

Table 3.4   Participating organisations (in alphabetical order of NHS Trust name)

NHS Trust	Site or Trust-wide response	Hospital(s) Included in the training site	City or town
Bro Morgannwg	Site	Neath Port Talbot Hospital	Port Talbot
Bro Morgannwg	Site	Princess of Wales Hospital	Bridgend
Cardiff and Vale	Trust	University Hospital of Wales, Llandough Hospital, Whitchurch Hospital, Rookwood Hospital & St Mary's Production Unit	Cardiff
Carmarthenshire	Site	West Wales General Hospital	Carmarthen
Carmarthenshire	Site	Prince Phillip Hospital	Llanelli
Ceredigion	Trust	Bronglais Hospital	Aberystwyth
Gwent	Site	Nevill Hall Hospital	Abergavenny
Gwent	Site	Royal Gwent Hospital & Caerphilly Miners' Hospital	Newport
Swansea	Site	Morriston Hospital	Swansea
Swansea	Site	Singleton Hospital	Swansea
Conwy and Denbighshire	Trust	Glan Clwyd Hospital	Rhyl
North East Wales	Trust	Wrexham Maelor Hospital	Wrexham
North Glamorgan	Trust	Prince Charles Hospital	Merthyr Tydfil
North West Wales	Trust	Ysbyty Gwynedd	Bangor
Pembroke and Derwen	Trust	Withybush Hospital & St David's Hospital	Haverfordwest
Pontypridd and Rhondda	Trust	Royal Glamorgan Hospital	Llantrisant
Velindre	Trust	Velindre Hospital	Cardiff

SECTION TWO: PHARMACY WORKFORCE DATA

The number of pharmacy staff in post is shown in Table 3.5 and illustrates the range of numbers of staff at the training sites.

Table 3.5   Number of pharmacy staff in post (headcount and WTE) in NHS Wales on 30 September 2006

Staff type	Number (headcount)		Number (Whole Time Equivalents (WTE))[22]	
	Total in NHS Wales	Mean per site (range)	Total in NHS Wales	Mean per site (range)
Pharmacists (other than diploma students)	382	22.5 (6 – 92)	304.7	17.9 (4.9 – 87.1)
1st year diploma pharmacists	31	1.8 (0 – 5)	31	1.8 (0 – 5)
2nd year diploma pharmacists	23	1.4 (0 – 4)	23	1.4 (0 – 4)
3rd year diploma pharmacists	0	0 (0)	0	0 (0)
Preregistration trainee pharmacists	38	2.2 (0 – 5)	38	2.2 (0 – 5)
Pharmacy technicians	394	23.2 (5 – 88)	305	17.9 (4.6 – 78.7)
1st year student pharmacy technicians	32	1.9 (0 – 5)	32	1.9 (0 – 5)
2nd year student pharmacy technicians	34	2.0 (0 – 6)	33.57	2.0 (0 – 6)
Senior/Assistant Technical Officers (S/ATOs) on NVQ 2	146	8.6 (0 – 41)	90.2	5.3 (0 – 38.9)
All other S/ATOs	142	8.4 (0 – 18)	63.2	3.7 (0 – 9.48)
Clerical staff	64	3.8 (0 – 18)	51.6	3.0 (0 – 15.2)
Other	9	0.5 (0 – 4)	7.68	0.5 (0 – 3.5)

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[22] The column requesting data on the number of whole time equivalent (WTE) staff was left blank by several respondents and so the WTE data are not complete.

Number of formally recognised tutors/assessors in post and the number actively involved in the role

Information about the total number of accredited diploma tutors, approved preregistration managers and tutors and NVQ assessors, and the number who had been actively involved in the role during the academic year 2005/6 was collected and is shown in Table 3.6.

Table 3.6   Number of formally recognised tutors/assessors[23] in post in NHS hospital pharmacies in Wales and number who performed the role in the last 12 months

Type of tutor/assessor	Number of formally recognised tutors and assessors (headcount)		Number who performed the role in the last 12 months	
	Total in NHS Wales	Mean per site (range)	Total in NHS Wales	Mean per site (range)
Accredited Cardiff University diploma tutors	207	12.2 (2 - 52)	152 (73.4%)	8.9 (0 – 39)
Preregistration tutors/managers	43	2.5 (0 – 9)	35 (81.4%)	2.1 (0 – 4)
Qualified NVQ assessors	92	5.4 (1 – 23)	81 (88.0%)	4.8 (1 – 23)
Trainee NVQ assessors	24	1.4 (0 – 7)	20 (83.3%)	1.2 (0 – 4)

Only 73.4% of accredited diploma tutors (n=152) had performed a formal diploma tutoring role in the last 12 months. A total of 55 accredited tutors had not tutored a trainee in the 2005/6 academic year. In the case of the diploma programme, most pharmacists in Wales were accredited tutors for the diploma course simply by virtue of their qualifications and experience. Therefore, the number of people who met the criteria for being a tutor was higher than the number of people who were actively involved in the role. Several pharmacists had a specialist area of practice and would normally only tutor candidates in that area. If no trainees undertook training in that specialist area, the accredited tutor may not have had any tutoring responsibility.

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[23] Formally recognised roles were accredited diploma tutors, RPSGB preregistration pharmacist managers and tutors and NVQ assessors and trainee NVQ assessors. It did not include other members of staff who were responsible for specific elements of training (for example supervising a preregistration trainee pharmacist during a rotation into a section of the pharmacy) but who were not formally accredited for the role.

The proportion of approved preregistration pharmacist tutors/managers[24] who had actively performed the role was higher (81.4%) than for the diploma tutoring role. In many hospitals, the same people acted as preregistration pharmacist tutors each year and the number of tutors closely mirrored the number of trainees. Each preregistration trainee pharmacist had a named tutor for the year. Most tutors were responsible for one trainee per year, although in some hospitals a tutor had more than one trainee.

A high proportion of qualified NVQ assessors (88.0%) had performed the role in the preceding 12 months. In addition, there were 24 trainee assessors, 20 of whom (83.3%) had performed the role. Student pharmacy technicians had to demonstrate competence in most of the areas of the pharmacy and in contrast to preregistration trainee pharmacists, there were several assessors involved with each trainee. The trainees were formally assessed by people from the sections they rotated through, rather than by a single tutor who oversaw the whole programme. The proportion of the year that each individual assessor undertook the role for would be determined by the number of trainees and the duration of the rotations through their section.

SECTION THREE: DIPLOMA IN CLINICAL PHARMACY

Time spent by hospital pharmacy staff[25] in supporting diploma pharmacists

Administrative time

The mean times spent on administrative work per trainee were calculated and are shown in Table 3.7. This illustrates that a mean of just over one hour per week was spent on the administration of the diploma programme. This included planning rotas, liaising with other trainers, documentation, pastoral support and dealing with day-to-day management (for example, lieu time, annual leave and sickness absence).

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[24] The RPSGB formally approved preregistration managers and tutors. In the hospital setting, there would normally be one RPSGB manager who took overall responsibility for the quality of the programme. This person may, or may not have been directly responsible for supervision of a preregistration trainee pharmacist. In addition, there may have been several other preregistration tutors who were directly responsible for one or more trainees.

[25] Hospital pharmacy staff included all people who supported the diploma pharmacist during their training programme. As well as accredited diploma tutors, this figure includes other people who were involved in training, management or administration of the programme. For the purposes of this study, they are collectively referred to as trainers.

Table 3.7   Total time (hrs/wk/trainee) spent on administrative work by hospital pharmacy staff to support each diploma pharmacist

Time spent by education and training lead Mean (range)	Time spent by diploma site tutor Mean (range)	Time spent by others Mean (range)	Total time spent on administration Mean (range)	Total time spent during the course (hrs/trainee) Mean (range)
0.4 (0.0 – 1.0)	0.4 (0.0 – 2.0)	0.2 (0.0 – 1.0)	1.1 (0.1 – 3.0)	112.0 (10.4 – 312.0)

Time spent supporting trainees to prepare for external assessments

Diploma pharmacists had to produce externally assessed pieces of work. Some of these activities were undertaken in the workplace resulting in a piece of coursework that was marked by Associate Course Directors (ACDs). Other activities were assessed away from the hospital environment but may have required some work-based preparation (for example, data collection, experience of certain activities or rehearsal of presentations), with the potential need for some support from their hospital-based trainers. The mean amount of time spent on these activities was calculated and is shown in Table 3.8.

These data showed that a substantial amount of time was spent supporting diploma pharmacists in preparation for the externally assessed elements of the diploma programme. A large element of this was support for trainees in preparing for and rehearsing presentations, although this was not the case at every site. A mean of 9 hours was spent supporting the audit project, although the range of estimates was wide (2 - 20 hours). There was a similar variation in training workload spent on preparation for the Objective Structured Clinical Examination (OSCE) (range 0 – 20 hours). Trainers could help trainees to prepare for the OSCE in many ways, including ensuring generic skills development as well as coaching about the processes used in the examination. Therefore, respondents may have categorised their support as ward-based training rather than support for the OSCE, perhaps distorting this finding.

Table 3.8   Time spent supporting trainees to prepare for externally assessed aspects of the diploma course

Name of Module	Externally assessed component	Training workload (hrs/trainee) Mean (range)
Module 1 Introduction to clinical pharmacy theory	Patient Management Problems	0.4 (0 – 1.5)
Module 2 Introduction to clinical pharmacy practice	Case presentation	2.3 (0 – 10.0)
Module 2 Introduction to clinical pharmacy practice	OSCE1	1.6 (0 – 20.0)
Module 3 Medicine clerkship	Case presentation	1.4 (0 – 4.0)
Module 4 Surgery clerkship	Case presentation	1.4 (0 – 3.5)
Module 5 Therapeutics 1	Written examination	0.1 (0 – 1.0)
Module 6 Therapeutics 2	Written examination	0.1 (0 – 1.0)
Module 7 Clerkship option 1	OSCE 2	0.4 (0 – 2.5)
Module 8 Clerkship option 2	Case presentation	1.1 (0 – 2.5)
Module 9 Critical care clerkship	Patient Management problems	0.7 (0 – 2.0)
Module 10 Information and education	Critical reading exercise	0.6 (0 – 4.0)
Module 10 Information and education	Teaching portfolio	2.4 (0 – 4.5)
Module 11 Pharmacy practice	Written examination	0.2 (0 – 2.0)
Module 12 Audit	Project	9.0 (2.0 – 20.0)
Module 16 Aseptic services	Portfolio	No data
Total time supporting the trainee for externally assessed components of the course		21.5 (9.5 – 55.0)

Training workload used to supervise clinical clerkships

In some clerkships the diploma pharmacist replaced the accredited tutor on their ward for some or all of the time and undertook the tutor's ward-based duties. Therefore respondents were asked to estimate the net training workload to take into account the overall impact of the presence of the trainee on workload. This approach was in line with an approach advocated by Norman et al (134) who had attempted a cost-effectiveness analysis of nurse cadet schemes. They developed a tool to offset the value of the work undertaken by the trainee against training costs. In clerkships where more time was spent training than was released by the trainee, this was indicated by

a positive value. In clerkships where less time was spent training than was released by the trainee, a negative value was used. This convention was used for the diploma pharmacists as they were registered pharmacists who are able to work autonomously[26].

In some of the clinical clerkships, particularly Modules 2, 4 and 5 (see Table 3.8), the trainee replaced the pharmacist tutor on their ward and released time, resulting in a net gain in time. However, in other clerkships, the pharmacist tutors were not replaced by the trainee and the clerkship required a net positive contribution of training workload. Particular clerkships where this was true were Module 9 (critical care) and Module 10 (medicines information). However, this finding was not the same at all sites, and in some cases, the trainee freed up pharmacist tutor time in these areas as well.

Overall training workload spent supporting diploma pharmacists

The total time spent on administration, preparation for external assessments and clerkships for the diploma programme is shown in Table 3.9. The results indicate that the net total training workload required over a two year programme of diploma study was negligible (3.5 hours in total over a two year programme). However, there was considerable variation over the course of the programme. In some areas, such as in administration and assessment tasks, considerable work was undertaken in support of the diploma pharmacist and no time was contributed by the trainee to this function in return.

Comparison of estimates of diploma training workload between sites

The net training workload spent on diploma pharmacist training per week at each site was compared and is shown in Figure 3.3. There was significant variation in estimates from different sites. Sites 4, 5 and 13 reported that over the course of the diploma programme, the presence of the diploma pharmacist released more than two hours of pharmacist time per week. Conversely, sites 1, 2, and 3 reported that the diploma pharmacist required more than two hours of training workload per week. Reasons for this variation in estimates were not known but potential explanations are discussed later in this chapter.

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[26] This convention was not used for the other novice trainees in this study as they were unregistered and so had to work under the supervision of a pharmacist.

Table 3.9   Total training workload (hrs/trainee) spent on all components of the diploma programme

Site code	Component of the diploma programme									Net time spent (hrs)	
	Administration work	Preparation for external assessments	Module 2 Introductory module	Module 3 Medicines Clerkship	Module 4 Surgical clerkship	Module 7 Optional clerkship	Module 8 Optional clerkship	Module 9 Critical care clerkship	Module 10 Medicines information	Net training workload spent over the whole programme	Net training workload per week
	Training workload (hrs per trainee)										
1	20.8	11.5	32.0	24.0	24.0	24.0	24.0	32.0	18.0	210.3	2.0
2	104.0	11.0	16.0	24.0	24.0	8.0	8.0	40.0	80.0	315.0	3.0
3	156.0	55.0	14.0	56.0	42.0	36.0	36.0	36.0	0.0	431.0	4.1
4	10.4	11.5	-60.0	-90.0	-90.0	0.0	0.0	0.0	0.0	-218.1	-2.1
5	156.0	20.3	-80.0	-96.0	-72.0	-48.0	-96.0	-56.0	-160.0	-431.8	-4.2
6	104.0	46.0	-24.0	-36.0	-36.0	16.0	16.0	64.0	40.0	190.0	1.8
7	52.0	26.0	-24.0	-36.0	-36.0	-16.0	-24.0	8.0	0.0	-50.0	-0.5
8	104.0	9.5	-8.0	-12.0	-12.0	-8.0	-8.0	16.0	20.0	101.5	1.0
9	156.0	18.0	-36.0	-66.0	-24.0	-40.0	-8.0	-24.0	0.0	-24.0	-0.2
10	62.4	19.1	-8.0	-94.5	-45.0	-108.0	-98.0	50.0	80.0	-142.0	-1.4
11	208.0	25.0	-44.0	-66.0	-66.0	-36.0	-28.0	-44.0	0.0	-51.0	-0.5
12	104.0	19.0	-64.0	-84.0	-96.0	16.0	80.0	16.0	60.0	51.0	0.5
13	34.3	10.4	-33.0	-116.8	-112.5	-32.0	-32.0	0.0	48.0	-233.6	-2.2
15	104.0	22.7	0.0	-60.0	-60.0	-60.0	-60.0	0.0	-60.0	-173.3	-1.7
16	104.0	23.0	-40.0	-60.0	-60.0	-40.0	-40.0	0.0	0.0	-113.0	-1.1
17	312.0	16.0	0.0	-40.0	-40.0	-15.0	-24.0	-15.0	0.0	194.0	1.9
Mean	112.0	21.5	-22.4	-47.1	-41.2	-18.9	-15.9	7.7	7.9	3.5	0.0

Site 14 did not take a diploma pharmacist in the period of the study and therefore is excluded from this table of results

63
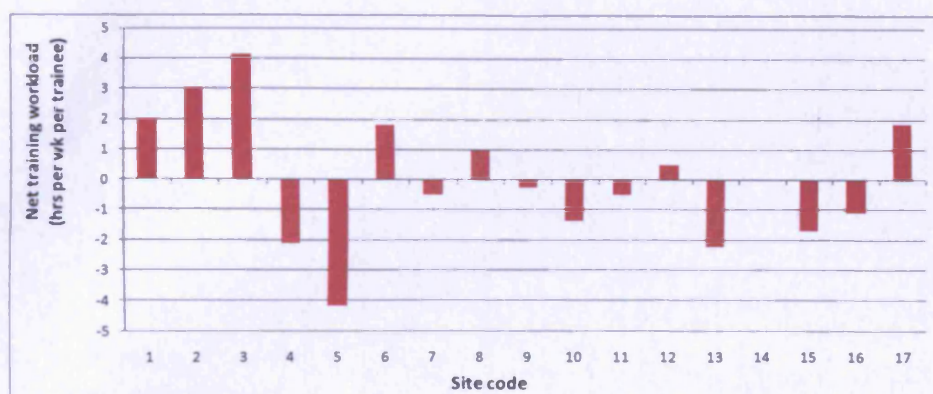
Figure 3.3   Net training workload spent on diploma pharmacist training (hrs/wk/trainee)

Accredited diploma tutor workload

Information was gathered about the number of accredited tutors who were available to deliver each module of the diploma and how many had actually done so in the 2005/6 academic year. Information was provided about the number of trainees who undertook each module in the same period. Respondents were also asked to indicate whether trainees were ever paired up and trained together in any of the modules. This information is shown in Table 3.10.

Modules 2, 4 and 5 were ward-based clerkships that were generalist in nature and could usually be covered on a variety of wards and so overall there was a net surplus of accredited tutors who were available to run these modules (assuming their other commitments allowed it). The number of accredited tutors was not uniform across all sites, so at some sites there may have been no additional tutors available to run these modules.

Modules 7 and 8 were optional specialist modules. The range of specialist subjects depended on the clinical specialities available at each hospital. Hospitals usually offered their diploma pharmacists a choice of specialities. The choice offered would be restricted to areas where a tutor was available.

The Modules that tended to have fewer tutors were Modules 9 (critical care) and Module 10 (medicines information). These were both compulsory components of the diploma and so all trainees had to undertake them. Critical care was an area that would normally be covered by specialist pharmacists,

and so the number of accredited tutors with relevant experience was limited. In addition, some hospitals only had a small number of critical care beds, which limited capacity for offering ward-based experience further. ·

Table 3.10   Number of accredited diploma tutors who ran, or were available to run, each module and number of trainees who undertook each module in 2005/6

Name of module	Number of tutors who ran each module in 2005/6 [27]	Number of trainees taking this module in 2005/6	Number of accredited tutors available in the subject area	Did any pairing up of trainees occur?
Module 2 Introduction to pharmacy practice	27	23	89	No
Module 4 Medicine clerkship	27	23	69	No
Module 5 Surgery clerkship	23	22	33	No
Module 7 Clerkship option 1	52	23	99	No
Module 8 Clerkship option 2	46	25	97	No
Module 9 Critical care clerkship	18	23	24	No
Module 10 Medicines information	17	19	22	Yes
Module 16 Aseptic services [28]	1	1	3	No

Medicines information was a compulsory module of the diploma that lasted for a minimum of 8 weeks. In some areas one medicines information unit (MIU) covered a group of hospitals. All diploma pharmacists in the catchment area needed to spend time in the unit. In a number of cases, trainees paired up to undergo medicines information training alongside other trainees. Depending on the size and workload of the MIU, there may have been insufficient "real" queries for this number of trainees to deal with and it may have been difficult for the trainee to be exposed to enquiry answering in real time, resulting in the trainees undergoing simulation exercises and theoretical scenarios instead. This was compounded by the fact that MIUs also needed to train other staff

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[27] The number of tutors who ran clerkships was sometimes higher than the number of trainees who undertook them. This was because some clerkships were split into two or three ward rotations, each with a different tutor.

[28] The aseptic services module was a new component which had only been offered to trainees from two sites. This explains the low uptake onto this module.

groups (such as preregistration trainee pharmacists) placing an additional burden on capacity in this area.

SECTION FOUR: PREREGISTRATION PHARMACIST TRAINING

Time spent by hospital pharmacy staff[29] in supporting preregistration trainee pharmacists

Administrative time

The mean times spent on administrative (i.e. non-teaching) work per trainee were calculated and are shown in Table 3.11. This illustrated that a mean time of two hours per week per trainee was spent on the administration of the preregistration pharmacist training programme. Activities undertaken in this time would include planning of rotas, liaising with other tutors and trainers, meetings, completing formal assessments for the RPSGB, pastoral support and dealing with day-to-day management issues.

Table 3.11   Total time (hrs/wk/trainee) spent on administrative work by hospital pharmacy staff to support each preregistration trainee pharmacist

Time spent by education and training lead Mean (range)	Time spent by preregistration tutor Mean (range)	Time spent by others Mean (range)	Total time spent on administration Mean (range)	Total time spent during the course (hrs/trainee) Mean (range)
1.2 (0 – 3.0)	0.4 (0 – 2.0)	0.4 (0 – 1.5)	2.0 (0 – 4.5)	103.0 (0 – 234.0)

Duration of rotations and training workload in preregistration trainee pharmacist rotations

The mean durations of each rotation and the mean training workloads per week for each rotation are shown in Table 3.12. This illustrated the extent to which preregistration pharmacist training programmes varied. The RPSGB performance standards (135) were outcome-focussed and could be achieved in many settings. Hospital pharmacies delivered training programmes using available resource. The format of each training programme was determined locally and reflected the services delivered by each hospital. This may explain

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[29] Hospital pharmacy staff included all people who supported the preregistration trainee pharmacist during their training programme. As well as approved preregistration tutors and managers, this figure includes other people who were involved in training, management or administration of the programme. For the purposes of this study, they are collectively referred to as trainers.

why the rotations in some areas were much longer in some sites than others. In particular, some hospitals in Wales had transformed their pharmacy services by automating their dispensaries with robots. (136). In these situations, the working patterns had changed and pharmacists only worked in dispensaries for short spells to perform clinical checks prior to items being dispensed by support staff. Preregistration pharmacist training may have changed at these sites to reflect the different roles that pharmacists performed.

Table 3.12   Duration (wks) of preregistration trainee pharmacist rotations in each section of the hospital pharmacy and training workload (hrs/wk/trainee) in each section

Name of rotation	Duration of each rotation Mean (range)	Training workload in each section Mean (range)
Induction	1.3 (0.6 – 4.0)	12.5 (4.0 – 30.0)
Dispensary	11.7 (5.0 – 17.5)	2.8 (0.0 – 5.0)
Stores/purchasing	1.7 (0.6 – 4.0)	5.9 (1.0 – 20.0)
Medicines Information	2.7 (0.6 – 4.0)	6.8 (0.0 – 30.0)
Ward/clinical	15.2 (8.0 – 23.0)	6.8 (2.5 – 20.0)
Aseptic services	3.3 (1.0 – 8.0)	7.1 (1.0 – 20.0)
QA/QC	0.8 (0.0 – 2.0)	2.8 (0.0 – 15.0)
Audit	2.3 (1.0 – 4.0)	3.4 (1.0 – 10.0)
Cross sector experience	2.1 (2.0 – 3.0)	1.5 (0.0 – 10.0)
Other	1.7 (0.0 – 5.0)	3.0 (0.0 – 15.0)
Annual leave	6.0 (4.0 – 7.0)	0.0 (0.0)
WCPPE courses	3.0 (3.0)	0.0 (0.0 – 0.8)
Total	51.8 weeks	

As well as considerations about ensuring that the training programme was providing the "right kind of experience" for the trainee, sites also took the capacity for training into consideration when planning programmes. For example, in medicines information units (MIUs), where there were problems with capacity for training of diploma pharmacists (as had been highlighted in responses to Section 3 of the questionnaire), there may also have been problems in accommodating preregistration trainee pharmacists. This may have affected decisions about whether a trainee could rotate through the MIU,

and if so, how long they could spend in that section. Whilst attempts to limit the impact that a trainee would have on service delivery might have involved shortening some rotations, the opposite could also have been effective. Rotational programmes that involve short duration rotations through sections had been identified as an informal barrier to learning for junior hospital pharmacists. (137) Increasing the length of rotations may help trainees to reach a level of performance where they are better able to contribute to service delivery.

Overall training workload spent supporting preregistration trainee pharmacists

The overall training workload spent on the preregistration trainee pharmacist programme is shown in Table 3.13.

In some cases, trainees had to visit a different hospital to gain experience in certain sections that were not available in-house (such as medicines information, quality assurance and aseptic services). No estimates of training workload were provided for training undertaken at other sites and are denoted in Table 3.13 as not available (n/a).

The aspects of preregistration pharmacist training that had the largest amounts of training workload spent on them were clinical rotations (104.0 hours) and the dispensary (33.6 hours). This was not surprising as these were the two areas of the pharmacy department where trainees spent the majority of their time (15.2 weeks in clinical rotations and 11.7 weeks in the dispensary).

A large amount of training workload was also spent in the other sections of the pharmacy - medicines information (26.5 hours) and aseptic preparation (24.4 hours) where the trainee only spent a mean duration of 2.7 and 3.3 weeks respectively, indicating that training in these areas was more intensive and demanding of training workload. It was not clear from these data whether trainees were able to reach a point where they could undertake work that contributed to patient care during these rotations or whether they were purely undergoing training. The results in Table 3.13 indicated that across the whole programme, the mean training workload was 6.5 hours per week per trainee (range 3.0 to 14.9).

Table 3.13 Training workload (hrs/trainee) spent on all components of the preregistration pharmacist training programme

Site code	Administration	Induction	Dispensary	Stores	Medicines Information	Clinical	Aseptic preparation	Quality Assurance	Audit	Cross Sector Experience	Other	Annual leave	WCPPE courses	Training workload per year	Training workload per week
						Component of the preregistration trainee pharmacist training programme									**Total time (hrs)**	
						Training workload (hrs per trainee)									
1	57.2	4.0	80.0	10.0	40.0	80.0	20.0	10.0	2.0	0.0	75.0	0.0	0.0	378.2	7.3
2	78.0	24.0	24.0	4.0	20.0	75.0	15.0	n/a	6.0	10.0	0.0	0.0	0.0	256.0	4.9
3	52.0	30.0	20.0	6.0	n/a	90.0	30.0	20.0	2.0	0.0	0.0	0.0	0.0	250.0	4.8
4	5.2	4.0	37.5	20.0	n/a	50.0	6.0	0.5	6.0	30.0	0.0	0.0	0.0	159.2	3.1
5	130.0	30.0	35.0	40.0	120.0	300.0	60.0	n/a	40.0	0.0	20.0	0.0	0.0	775.0	14.9
6	0.0	4.0	64.0	2.0	8.0	104.0	16.0	4.0	8.0	2.0	32.0	0.0	0.0	244.0	4.7
7	52.0	15.0	17.5	5.0	n/a	78.0	n/a	n/a	9.0	1.0	2.5	0.0	0.0	180.0	3.5
8	130.0	20.0	0.0	4.0	2.0	105.0	2.0	n/a	5.0	0.0	0.0	0.0	0.0	268.0	5.2
9	104.0	10.0	20.0	1.0	20.0	220.0	10.0	15.0	10.0	4.0	7.0	0.0	0.0	421.0	8.1
10	156.0	8.4	10.8	30.0	32.0	230.0	40.0	n/a	3.5	3.0	1.0	0.0	0.8	515.5	9.9
11	130.0	20.0	70.0	40.0	n/a	60.0	5.0	n/a	9.0	2.0	9.0	0.0	0.0	345.0	6.6
12	156.0	22.0	32.0	8.0	45.0	104.0	7.0	n/a	12.0	0.0	80.0	0.0	0.0	394.0	7.6
13	234.0	4.0	34.5	0.6	4.0	43.2	30.0	4.0	2.4	2.0	0.0	0.0	0.0	358.7	6.9
15	156.0	24.0	39.0	8.0	7.2	27.5	64.0	n/a	8.0	0.0	12.0	0.0	0.0	345.7	6.7
16	156.0	24.0	39.0	8.0	16.0	50.0	48.0	n/a	4.0	0.0	0.0	0.0	0.0	345.0	6.6
17	52.0	2.0	15.0	3.0	9.0	48.0	12.5	3.0	6.0	4.0	0.0	0.0	0.0	154.5	3.0
Mean	103.0	15.3	33.6	11.9	26.5	104.0	24.4	8.1	8.3	3.6	10.4	0.0	0.0	336.9	6.5

Site 14 did not take a preregistration trainee pharmacist in the period of the study and therefore is excluded from this table of results

Comparison of estimates of training workload between sites

The estimates of total training workload spent at each site are shown in Figure 3.4[30]. As was the case with the diploma programme, there was significant variation in estimates between sites. Potential reasons for this variation are discussed later in the chapter.
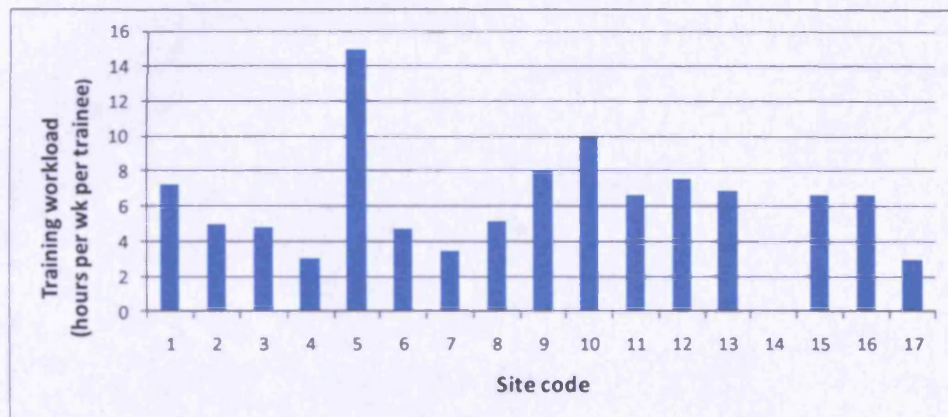
Figure 3.4   Training workload spent on preregistration pharmacist training (hrs/wk/trainee)

SECTION FIVE: STUDENT PHARMACY TECHNICIAN TRAINING

Time spent by hospital pharmacy staff[31] in supporting student pharmacy technicians

Administrative time

The mean administrative (non-teaching) training workload was calculated and is shown in Table 3.14. This illustrated that a mean time of over three hours per week per trainee was spent on the administration of the student pharmacy technician training programme. Activities undertaken in this time would have included planning of rotas, liaising with other tutors and trainers, meetings, completing NVQ assessments, pastoral support and dealing with day-to-day management problems.

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[30] Site 14 did not take a preregistration trainee pharmacist in the period of this study
[31] Hospital pharmacy staff included all people who supported the student pharmacy technician during their training programme. As well as qualified NVQ assessors this figure includes other people who were involved in training, management or administration of the programme. For the purposes of this study, they are collectively referred to as trainers.

Table 3.14   Total time (hrs/wk/trainee) spent on administrative work by hospital pharmacy staff to support each student pharmacy technician

Time spent by education and training lead Mean (range)	Time spent by NVQ assessor Mean (range)	Time spent by others Mean (range)	Total time spent on administration Mean (range)	Total time spent during the course (hrs/trainee) Mean (range)
1.5 (0 – 5.0)	1.4 (0 – 7.0)	0.2 (0 – 1.0)	3.1 (0.4 – 10.5)	325 (41.6 – 1092.0)

Duration of and training workload in student pharmacy technician rotations

The mean durations of each rotation and the mean training workloads per week for each rotation are shown in Table 3.15. Factors such as the range of services delivered at the site, the intended scope of practice of the trainee upon completion of the course and the capacity of the service to offer training in specific areas would influence programme design.

Table 3.15   Duration (wks) of student pharmacy technician rotations in each section of the hospital pharmacy and training workload (hrs/wk/trainee) in each section

Section	Duration of rotation Mean (range)	Training workload in each section Mean (range)
Dispensary	54.0 (23.0 – 80.4)	3.1 (0.3 – 20.0)
Stores/purchasing	14.1 (2.0 – 34.0)	5.0 (0.5 – 20.0)
Medicines information	0.3 (0.0 – 2.0)	0.7 (0.0 – 5.0)
Ward/medicines management	7.5 (0.0 – 30.0)	1.7 (0.0 – 10.0)
Aseptic services	12.6 (0.0 – 24.0)	6.2 (0.0 – 28.0)
QA/QC	0.1 (0.0 – 1.0)	0.1 (0.0 – 1.0)
Other (incl college)	5.2 (0.0 – 20.0)	2.4 (0.0 – 20.0)
Annual leave	10.0	0.0
Total No of weeks	103.8	

Units of the NVQ being undertaken by student pharmacy technicians

The number of student pharmacy technicians that were undertaking each unit of the NVQ level 3 is shown in Table 3.16.

Table 3.16   Number of student pharmacy technicians who were working towards, or had completed, each unit of the NVQ level 3

NVQ Unit number and title	Number of 1st year trainees who were working towards this unit	Number of 1st year trainees who completed this unit	Number of 2nd year trainees who were working towards this unit	Number of 2nd year trainees who completed this unit
Mandatory Units				
3.01 Dispense medicines and products	33	4	24	23
3.02 Control stock of pharmaceutical materials and equipment	27	16	15	15
3.03 Providing pharmaceutical information and advice	25	4	20	20
3.04 Ensure your own actions reduce the risks to health and safety	34	12	19	17
Optional Units (select 4)				
3.05 Manage your work and development	19	2	16	12
3.06 Provide an effective pharmaceutical service for customers	29	4	25	24
3.07 Support the use of pharmacy information technology	21	6	18	16
3.08 Manufacture and assemble sterile and non-sterile batch medicinal products	7	6	10	11
3.09 Prepare pharmaceutical products aseptically	12	6	23	21
3.10 Assist in the sale of OTC medicines and provide information	2	0	0	0
3.11 Assist in the provision of community specialist activities	0	0	0	0
3.12 Facilitate learning through demonstration and instruction	2	0	4	6

All student pharmacy technicians worked towards the full NVQ level 3, which entailed completion of 4 mandatory and 4 optional units. Optional units of the

NVQ could be selected either by the employer, based on their service needs or by the candidate, if they had a particular interest in a given area (at the manager's discretion).

Overall training workload spent supporting student pharmacy technicians

The overall training workload for student pharmacy technicians is shown in Table 3.17. The results indicated a mean of 6.4 hours per week per trainee (range 2.3 to 16.5) was spent training student pharmacy technicians.

At some sites the student pharmacy technicians did not undergo rotations into all the areas listed and so the value of time spent is denoted as n/a in Table 3.17. One site (site 3) did not provide any estimates of training workload in the individual rotations although their estimate of administrative time was higher than average. No further information about how the estimates had been calculated was obtained as the person who had answered the questionnaire was unavailable. An assumption was made that the training workload was all included in the value provided for administrative time. Mean values of training workload in each rotation were calculated based on the sixteen sites that had provided the values for each section individually.

The elements of student pharmacy technician training that involved most training workload were dispensary rotations (170.0 hours), stores (63.0 hours) and aseptic services (83.7 hours). These were the areas of the pharmacy department where trainees spent the majority of their time (54.0 weeks in dispensary rotations, 14.0 weeks in stores and 12.6 weeks in aseptic services).

Comparison of estimates of training workload between sites

The estimates of training workload spent at each site over the whole programme are shown in Figure 3.5. In line with the results from the diploma and preregistration trainee pharmacist programmes, there was significant variation in estimates between sites. Potential reasons for this variation are discussed later in the chapter.

Table 3.17 Training workload (hrs/trainee) spent on all components of student pharmacy technician training programme

Site code	Component of the student pharmacy technician training programme								Total time (hrs)	
	Administration	Dispensary	Stores	Medicines information	Wards	Aseptic preparation	Quality Assurance	Other (Distribu tion)	Training workload over 2 years	Training workload per week
	Training workload spent on each element (hrs per trainee)									
1	41.6	285.0	20.0	5.0	3.0	110.0	n/a	160.0	624.6	6.0
2	624.0	240.0	48.0	n/a	40.0	80.0	n/a	8.0	1040.0	10.0
3	728.0	n/a	n/a	n/a	n/a	0.0	n/a	n/a	728.0	7.0
4	49.4	112.5	28.0	n/a	6.0	30.0	1.0	10.0	236.9	2.3
5	572.0	16.5	240.0	n/a	0.0	336.0	n/a	n/a	1164.5	11.2
6	1092.0	32.0	12.5	n/a	12.5	16.0	n/a	n/a	1165.0	11.2
7	312.0	52.7	2.5	n/a	5.5	9.0	n/a	n/a	381.7	3.7
8	208.0	960.0	160.0	n/a	n/a	240.0	n/a	144.0	1712.0	16.5
9	312.0	68.0	50.0	n/a	30.0	n/a	n/a	40.0	500.0	4.8
10	124.8	167.4	145.0	0.8	n/a	160.0	n/a	n/a	598.0	5.8
11	130.0	68.0	44.0	n/a	84.0	54.0	n/a	7.0	387.0	3.7
12	104.0	60.0	32.0	n/a	n/a	80.0	n/a	n/a	276.0	2.7
13	364.0	213.0	48.0	5.0	n/a	64.0	n/a	n/a	694.0	6.7
14	343.2	138.0	70.0	2.0	5.0	36.0	n/a	n/a	594.2	5.7
15	130.0	144.0	24.0	n/a	n/a	60.0	n/a	n/a	358.0	3.4
16	130.0	116.0	68.0	n/a	8.0	16.0	n/a	n/a	338.0	3.3
17	260.0	46.0	16.0	n/a	46.0	48.0	n/a	8.0	448.0	4.3
Mean	325.0	169.9	63.0	3.2	21.8	83.7	1.0	53.9	661.5	6.4
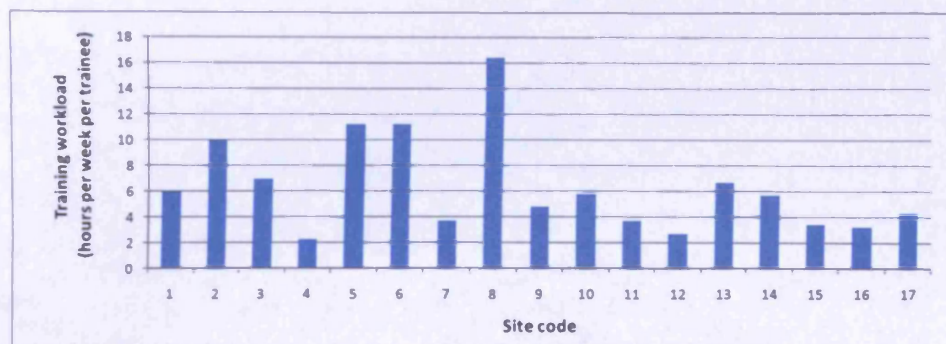
Figure 3.5 Training workload spent on student pharmacy technician training (hrs/wk/trainee)

SECTION SIX: NATIONAL VOCATIONAL QUALIFICATION (NVQ) LEVEL 2 TRAINING (PHARMACY ASSISTANTS)

Time spent by hospital pharmacy staff[32] in supporting pharmacy assistants undertaking the NVQ level 2

Administrative time

The mean times spent on administrative (non-teaching) activities were calculated and are shown in Table 3.18. Over 2.5 hours of training workload were spent per week per trainee on administrative work. Given that there were large numbers of pharmacy assistants (mean 8.6 (range: 0 – 41)) at each training site (see Table 3.5) this equated to a significant workload. At the time of the study over half of the pharmacy assistants in the NHS in Wales (146/288) were working towards one or more units of this qualification. Table 3.19 shows the proportion of pharmacy assistants who had entered for the full NVQ level 2 award, compared with the number who were working towards part credit.

Units of the NVQ level 2 being undertaken by pharmacy assistants

Respondents were asked to provide information about the number of pharmacy assistants that had attempted each unit of the NVQ level 2 in the previous 12 months and training workload required. The number of candidates taking each unit and the estimate of training workload for these is

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[32] Hospital pharmacy staff included all people who supported the pharmacy assistants to obtain their NVQ level 2. As well as qualified/trainee NVQ assessors this figure includes other people who were involved in training, management or administration of the programme. For the purposes of this study, they are collectively referred to as trainers.

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shown in Table 3.20. The majority of trainees (113/146) were working towards one or more of the mandatory units, which were generic and could be completed in any setting. With the exception of the unit 2.04 relating to "over-the-counter" (OTC) sales, all units appeared to take similar amounts of training workload (between 6 and 10 hours per trainee per unit) to complete.

Table 3.18   Total time (hrs/wk/trainee) spent on administrative work by hospital pharmacy staff to support each NVQ level 2 candidate

Time spent by education and training lead Mean (range)	Time spent by NVQ assessor Mean (range)	Time spent by others Mean (range)	Total time spent on administration Mean (range)	Total time spent during a year (hrs/trainee) Mean (range)
0.9 (0.0 – 6.0)	1.5 (0.0 – 5.0)	0.2 (0.1 – 1.0)	2.6 (0.0 -7.5)	137.0 (0.0 – 390.0)

Table 3.19   Number of pharmacy assistants working towards part credit of the NVQ level 2 and the full award.[33]

	Number of candidates working towards part credit	Mean (range)	Number of candidates working towards the full NVQ level 2 (6 units)	Mean (range)
Number of candidates	44	3.1 (0 – 9)	80	5.7 (0 – 12)

Rotations undertaken by candidates undergoing the NVQ level 2 training

Unlike the other groups of trainees in NHS Wales, pharmacy assistants who were undertaking NVQ level 2 training were usually existing staff employed in permanent posts and a number of these worked in one area rather than being on a rotational programme. Of the seven sites that did use rotational programmes for their pharmacy assistants, all included the dispensary and stores in the rotation, five sites also included ward services and two sites included aseptic services. The duration of the rotations into each area and estimates of the training workload involved are shown in Table 3.21.

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[33] Three sites did not answer this question and so the data are not complete

Table 3.20   Uptake of each unit of the NVQ level 2 between 2005 and 2006 and mean training workload in support of trainees in each unit

NVQ unit number and title	Number of trainees who were working towards this unit	Number of trainees who achieved this unit	Training workload to support a candidate through this unit (hrs/trainee) Mean (range)
Mandatory Units			
2.02 Ensure your own actions reduce the risk to health and safety	113	35	8.0 (1 – 18)
2.01 Assist with the provision of a pharmacy customer service	114	35	7.5 (1 – 18)
2.03 Support the work of your team	113	34	7.3 (1 – 18)
Optional Units (select 3)			
2.04 Assist in the sale of OTC medicines and provide information	1	1	2.0 (2)
2.05 Assist in the supply of prescribed items	27	12	8.3 (1 – 20)
2.06 Assist with the assembly of prescribed items	51	20	8.7 (1 – 17)
2.07 Order, receive and store pharmaceutical stock	71	14	9.3 (1 - 18)
2.08 Assist with the supply of pharmaceutical stock	83	35	8.8 (1 – 18)
2.09 Prepare to make pharmaceutical products	20	1	6.8 (1 – 16)
2.10 Assist with the manufacture and assembly of medicinal products	22	1	9.0 (1 – 18)
2.11 Assist with the preparation of aseptic products	21	1	9.4 (1 – 20)

Time taken to complete the full award

Respondents were asked how long it would take a "typical" NVQ level 2 candidate to complete the entire NVQ level 2 award in their department, assuming they were new in the department and had no previous pharmacy experience. Answers to this question ranged between 10 weeks to 112 weeks (mean = 64.9 weeks). Some candidates were working in rotational programmes and so would not have been able to gather all of their evidence until they had worked in all of the rotations. It was not possible to obtain a meaningful assessment of training workload from these data.

Table 3.21   Duration (wks) of NVQ level 2 trainee rotations in each section of the hospital pharmacy and training workload (hrs/wk/trainee) in each section[34]

Site code	Dispensary		Stores/Purchasing		Ward services		Aseptic services		QA/QC	
	Duration	Workload	Duration	Workload	Duration	Workload	Duration	Workload	Duration	Workload
1	12	5.0	2	37.5	90	2.0				
2										
3	12	10.0	45	8.0	5	8.0				
4										
5										
6										
7										
8	14	2.5	5	1.5	18	2.5	14	2.5		
9										
10	47	6.5	47	6.5						
11										
12										
13										
14	40	2.0	20	2.0	10	1.0	40	4.0		
15										
16	52		52							
17	26	1.0	26	1.0	52	1.0				

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[34] As the NVQ level 2 qualification was relatively new, experience of the programme was limited. Sites were only able to estimate time spent if they had candidates who had completed the NVQ level 2 programme in a particular section. As a result, several sites did not provide complete answers to this question which explains why some cells have been left blank.

SECTION SEVEN: OTHER IN-HOUSE TRAINING PROGRAMMES

Respondents were asked to provide information about training workload to support all other programmes of study undertaken by pharmacy staff. The results of this are shown in Appendix 10. The goal had been to identify the range of activities and estimate the amount of time that Welsh NHS hospital pharmacy departments were spending on in-house training. The list of programmes that were identified was long and questions in this section of the questionnaire were not well answered making further analysis of this section of the results of limited value. Research into these elements of training was considered to be of less importance than the training for novice trainees and diploma pharmacists. No further analysis of these data was undertaken.

SECTION EIGHT: TRAINING PROVIDED TO EXTERNAL ORGANISATIONS AND OTHER STAFF GROUPS

Respondents were asked to quantify the amount of training that was provided to external organisations and staff during working hours. It was apparent from the responses to this section of the questionnaire that some sites had obtained data from a selection of key personnel specifically in order to answer this question. Very few sites appeared to record the information routinely and so individual pharmacists had been asked to provide the information from their own records. Some sites did not provide any information about external training, although this was known to take place. A summary of the responses is shown in Appendix 11. The information indicated that pharmacy staff in the NHS in Wales delivered a significant amount of training to people outside their own organisation.

Pharmacy personnel from NHS Trusts were involved in delivering training for other NHS hospital pharmacy staff – in some cases where one or more of their own staff may have been a participant (e.g. preregistration pharmacist training courses, diploma tutorials and study days for members of pharmacy staff). A total of 420 hours of work of this nature was recorded in one year[35]. This type of training, most often provided by education institutions (Universities and Further Education colleges) would be beneficial to both parties as it ensured

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[35] This figure is an underestimate as a number of respondents did not have records available of the time spent delivering external training.

that the content of any training was relevant to practice and was up to date. It also helped to keep the cost of training at affordable rates.

Almost 500 hours[36] of time (of those who responded) was spent by NHS hospital pharmacy staff delivering training to other healthcare professions. This included training such as junior doctor induction training, study days for nurses and in various aspects of prescribing courses. Pharmacy personnel are valued for their contribution in these areas and so demand for their skills was high. Training of other health professionals would be generally beneficial in building working relationships and reputation of the pharmacy service amongst colleagues in other professions.

Pharmacists and pharmacy technicians were also involved in training of patients, notably during cardiac rehabilitation sessions. This was recorded by some respondents as training, although it could be argued that this was service delivery.

As the data on time spent by pharmacy staff on training for external staff was incomplete no further analysis or interpretation was attempted.

SECTION NINE: ESTIMATE OF TRAINING CAPACITY

Respondents were asked to describe their perceptions of their training workload in relation to their current training capacity using free-text boxes and percentages. Site codes (1 – 17) were used to preserve the anonymity of each response.

A number of respondents described being at, or close to capacity, but indicated that they were managing the current workload:

2   "The current training workload feels close to capacity, as there are times we feel over capacity and appear to just be training continuously."

10   "We are working at full capacity with our trainees."

9   "Close to maximal."

Other respondents made comments suggesting that they were already over-capacity and struggling to cope with the demand in some areas.

11   "Training workload is currently exceeding training capacity."

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[36] This figure is an underestimate as several respondents did not provide an answer to this question

13	"The training workload has increased over the last few years. Some sections have had difficulty coping."
15	"We are still trying to get through the backlog of NVQ2 which is having a major impact."

Several respondents mentioned the impact that the increasing amounts of mandatory training had had on their workload.

2	"When mandatory training is added in the workload in training feels to greatly exceed our capacity."
9	"KSF has had a big effect on time commitment."
10	"What has become exceptional is the amount of mandatory training from the Trust where all staff must attend."
12	"Not enough time to do mandatory training for all staff."

One respondent indicated that there was seasonal variation in the workload for training so that at some points in the year, services were under particular pressure to deliver training.

4	"Varies dramatically at various times throughout the year. August, Sept & Oct – full capacity, once trainees become more useful this lessens the load."

Numeric estimates of workload in relation to capacity

Respondents' estimates of workload in relation to capacity are shown in Table 3.22. The results indicated that perceptions about training capacity ranged from being slightly under capacity to being markedly over capacity. One respondent who had estimated being at 90% capacity stated that "a lot depended on the qualities and capabilities of the candidates". A respondent who estimated being at 150% capacity qualified their estimate by stating that this would be their estimate "if they were working on the basis of attempting to fulfil all training needs". No other comments were made about the estimates provided.

Table 3.22   Numeric estimates of workload in relation to capacity

Site code	Estimate of workload in relation to capacity
1	90%
2	100%
3	90%
4	70%
5	100%
6	175%
7	80%
8	150%
9	90%
10	120%
11	130%
12	100%
13	80%
14	100%
15	120%
16	120%
17	150%

Situations where workload exceeded capacity

Respondents were asked if they had ever experienced situations where workload had exceeded capacity and if so, to explain what had happened. Some sites reported particularly difficult times in the year when the training burden was particularly high.

5   "We have a crisis time in January when the diploma pharmacists are undertaking/completing their audits and we have the UWCC 3rd year pharmacy students."

3   "During the Summer vacation period, as there is a steady stream of students, each being trained in the same thing. This may be more of a case of "training fatigue" at a busy time of year, due to annual leave etc."

7   "August – each year – many new training staff commence employment (prereg, student tech, diploma) and other staff on A/L, therefore difficult to allocate enough time to training."

Others described particular years where they had increased their intake of trainees only to discover that this had resulted in problems.

3   "We have refused an additional student pharmacy technician post (3 rather than 2) as the additional work could not be accommodated (having had 3 trainees in one year before)."

11   "In previous years we increased our prereg trainee posts from two to three without an increase in training resources. Following a review, trainers were

concerned the standard of training could not be sustained and support three trainees. Subsequently preregistration places were reduced back to two."

10   "We have had to move from being able to offer diploma students the usual 2 year diploma as we haven't enough diploma tutors, to offering the programme over three years."

Situations where requests to deliver training had been refused

Respondents were asked if they had ever been in the position of refusing requests to do additional training in case capacity would be exceeded. Every respondent reported examples of this type. Some limited the number of work experience visits.

11   "We are not able to accommodate all school students who request work placements. This could affect future recruitment into pharmacy."

5   "Yes – we occasionally refuse requests for placements for work experience."

10   "We frequently refuse work experience requests (A level standard and MPharm level) as we have to prioritise our time for those who have already made firm decisions on their future path."

There were also a number of examples of situations where pharmacy staff had to turn down requests to train staff from within their Trust.

4   "Refuse to lecture on nursing days."

6   "Yes I have refused to do lectures/training to nurses/junior doctors due to not having time/resources to fill requests. Lectures/training postponed for a few months."

11   "Recently we were not able to participate in training of new nurses due to workload issues within the pharmacy. Not meeting this training request could affect nurse practice regarding drug administration at ward level."

Some respondents reported that they had taken steps to make training workload more manageable. This had involved limiting opportunities for hands–on experience of the workplace by reducing the number or duration of visits to clinical areas or using workbooks and reading as a substitute for other types of training.

1   "6th form placements reduced to 2/7 and workbook."

2   "I have had to give students some reading for a morning or afternoon as I have not had enough volunteers to take them out on the wards, or allow them to visit certain sections within the department."

15   "To manage time, we organise open days rather than unpaid experience."

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Discussion

The aim of this study was to estimate training workload and capacity in pharmacy services in the NHS in Wales. The study achieved its first two objectives of obtaining estimates of training workload for Cardiff University postgraduate diploma pharmacists and novice pharmacy staff on training programmes to meet registration requirements. By undertaking a detailed breakdown of the elements of the training programmes, in an approach similar to that recommended by Campbell and Tsang, (92, 93) and used by Stapleton and Harralson in pharmacy, (80, 114) it was possible to obtain estimates about the time spent on each activity. The 100% response rate meant a full overview of NHS hospital pharmacy training practices in Wales was obtained.

Estimates of training workload for qualified staff on other programmes, and training delivered to external staff were not obtained from all sites and so the data were of limited value. This topic was not a priority for this study and so no further attempts were made to gather more data or undertake further analysis of training workload for these groups. This is one area where more research could be undertaken if it were considered important. Suggestions for further research will be discussed in Chapter 6.

Opinions about training capacity of pharmacy services in relation to training workload were obtained from local opinion, which, in the absence of any alternative measures may be an appropriate source of this information. (73)

Discussion of key findings

The study estimated training workload for diploma pharmacists and novice pharmacy staff (i.e. diploma pharmacists, preregistration trainee pharmacists, student pharmacy technicians and pharmacy assistants).

Overall, it was found that diploma pharmacists contributed as much work to the department as they required in training workload. Some aspects of diploma training had training bottlenecks that limited capacity to expand diploma pharmacist training. These bottlenecks were primarily in specialist areas where there was a large volume of material that needed covering prior to being able to work in the area and trainees did not usually spend long enough in the section to be able to perform at an appropriate level. (115)

Preregistration pharmacist training was found to require significant training workload (6.5 hours per week per trainee). These trainees could not legally work unsupervised and so their contribution to the work of the service was not calculated in the same way as for the diploma pharmacists. They were considered as being in a trainee role for 100% of their time. Stapleton (80) undertook a similar analysis of preregistration pharmacist training at six NHS hospitals in London in 2003 to estimate costs of training. They concluded that the mean direct cost per trainee (not including courses and other expenditure) was £12,471 (range £10,354 - £13,982). This was based on a calculation of staff time multiplied by costs at an hourly rate, depending on what grade of staff was involved. Unfortunately, Stapleton's report did not provide sufficient detail to be able to determine the actual number of hours spent on the programme, however, it was possible to calculate the weekly cost of training workload to be £240 per week. If it was assumed that the training was undertaken by an E-grade pharmacist (at an hourly rate of £22.92 in 2003), they would have spent an average of 10.5 hours per week on the activity which is within the range of the estimates from this study. This comparison provides some confidence in the results of the present study.

Differences in training workload between preregistration trainee pharmacists and diploma pharmacists had parallels to comparisons between junior doctor preregistration house officer (PRHO) training and registrar training. GP trainers described having to reduce their own case load when supervising junior doctors. (138) In contrast, a review of general practice registrar training in inner London indicated that trainee registrars were generally perceived as contributing to service delivery. (139)

Training of student pharmacy technicians was found to require a significant amount of training workload (6.4 hours per week per trainee), most of which was undertaken by NVQ assessors. In the same way as preregistration trainee pharmacists, these figures were calculated based on an assumption that the trainees could not work unsupervised as they were not registered. However, unlike preregistration trainee pharmacists, the student pharmacy technicians had a more limited range of practices to develop and spent longer in each section that they rotated through. For example, the mean time that student pharmacy technicians spent in the dispensary was 54 weeks over a

two-year programme. This may have allowed them to develop to a stage where they were able to undertake a significant amount of work that contributed to service delivery and anecdotally, that was the case. Whilst training workload for student pharmacy technicians appeared to be similar to that of preregistration trainee pharmacists, if the contribution to service delivery had been taken into account, the differences between the two groups may have been significant.

The administrative workload involved in the NVQ level 2 programme for pharmacy assistants was found to be 2.6 hours per week per trainee. Experience of the training programme was limited as it had only recently been introduced. The work patterns of pharmacy assistants varied and so estimates of time taken per week to complete the training programme were of limited value and no overall training workload calculations were attempted.

The numeric estimates of workload in relation to capacity indicated that at some sites workload had already exceeded capacity, although it was apparent that the training was still taking place, with no obvious adverse consequences. The capacity estimates were subjective, no rationale for the estimates had been sought, and they were not validated in any way. Therefore, one explanation for this apparent inconsistency was that the estimates were inaccurate. Development of a method for obtaining accurate estimates of training capacity was an area that had been identified as needing further investigation. (73) Another possible explanation was that when workload exceeded capacity, the training continued, but changes to the quality or content of the training resulted, potentially by omitting certain aspects of the training or by reducing the time spent on various elements.

Variations in estimates of training workload between sites
There were marked variations between sites in the estimates of training workload for the diploma pharmacist training and training programmes for novice staff to meet registration requirements. All respondents had been asked not to discuss their estimates with their colleagues at other sites, but to submit their data independently, to avoid the responses being influenced by knowledge of each other's estimates. The amount of variation in the responses supports the notion that there was little or no consultation between respondents until the meeting which was held to compare responses and this

was apparent from the discussion at the meeting. There are several reasons why there may have been differences in workload estimates. Reasons for variation may have included:

- differences in training programmes between sites (for example, how long trainees spent in each area, which roles they performed, how much time they spent time contributing work in an area once trained);

- characteristics of the trainer (for example, level of experience and confidence in the training role, seniority, competing priorities, preferred teaching and training style);

- characteristics of the trainee (for example, previous experience, degree of direction and motivation required, preferred learning style);

- organisational size and number of trainees (for example, larger hospitals might have used less training workload per trainee than smaller hospitals due to economies of scale);

- the culture, workload and expectations about training of the organisation;

- the respondents may not have been able to access the required information to produce estimates;

- the estimates were subjective, rather than being obtained from direct measurement;

- respondents may have misunderstood what information was needed.

Rough et al (140, 141) had described the difficulty in obtaining workload performance measures to reflect hospital pharmacy activity because workload measures are ambiguous and lack specific meaning. This supports the argument that accurate estimates of training workload would have been difficult to produce. However, if the workload estimates were a true reflection of practice, then the results demonstrated a wide variability in training practice between sites.

The results clearly indicated that some training practices differed (for example in the duration of rotations), which may have explained some of these differences. It may be that some training sites used more efficient or effective training practices than others. If so, these may be useful to share and perhaps be adopted more widely.

Discussion of the method selected

Use of a structured questionnaire achieved the primary objectives of this study which were to obtain estimates of training workload in delivering training programmes for diploma pharmacists and novice pharmacy staff. The use of a self-completion questionnaire was useful as it allowed respondents to complete the questionnaire in their own hospital training site. This provided the opportunity to consult with colleagues, to gather relevant information and check the details of rotas and other training materials.

The approach of identifying and estimating time for all elements of the training programme, as had been used by Stapleton and Harralson, (80, 114) was helpful as it prompted respondents to take all aspects of training into account. In addition, it allowed for points of detail to be checked for accuracy and understanding once the completed questionnaires were returned.

In contrast, the sections of the questionnaire that required completion of free-text boxes (Sections 7 and 8) were less complete. This meant that data about the full range of training was not collected. Reasons for this were that respondents may not have understood what to include in their response because of the free-text boxes. The free-text format would also have placed more of a burden on the respondents. It may also be that in some cases, the data were not available or may simply have been because these sections were towards the end of a lengthy questionnaire and respondents did not have the time available to provide the information requested. It was not possible to draw meaningful conclusions from these data. If it was considered important to collect these data it may be necessary to collect them prospectively as retrospective sources may not exist. On reflection the resources available for this study would have been better utilised if they had been focussed on training for novice pharmacy staff and diploma pharmacists, rather than attempting to estimate training workload for the whole of the training activity.

The use of a hard copy of the questionnaire was relevant to the success of the method. The questionnaire was supplied in a form that could be separated and handed to relevant individuals to complete. In some training sites, several different individuals prepared responses about the different elements of the training programmes. This meant that individuals who were likely to have first-hand knowledge of the training were involved in generation of these data. It

was important to ensure that all respondents understood the questions and the definitions that were involved in making the estimates of time taken. The pharmacy education and training leads were used to disseminate the information to other individuals, which ensured that there was at least one person at each training site who was aware of the relevant information.

The challenges of determining capacity (73) and measuring workload (140, 141) in the service industries have been described elsewhere. This was found to be the case in this study. The questionnaire that was developed had to take into account a multitude of factors that contributed to overall training workload. A detailed and lengthy (20-page) questionnaire was used and required careful explanation to ensure that respondents all used the same conventions to estimate training workload and capacity.

Recommendations for practice

The work provided information which NHS hospital chief pharmacists and pharmacy education and training leads, not only in Wales but in other parts of Great Britain, could use to understand training workload for diploma pharmacists and novice pharmacy staff in their organisations. This could help inform their decisions about whether they had capacity in their service to accommodate different numbers and types of trainees. Hospital pharmacy training sites in Wales could use the data to compare their own site data with that of other training sites in Wales (as they were informed which anonymous site codes related to their own organisations).

Research priorities for this programme of study

The findings of this phase of the study were reviewed in order to identify the priorities for the next stage of the research. Diploma pharmacist training was found to be "cost-neutral" in terms of the relative training workload and contribution that the trainee made to the service. In contrast, preregistration pharmacist training was found to require the most training workload. Student pharmacy technician training required a similar trainer input to preregistration pharmacist training, but the training programme was less intensive, covering all areas of pharmacy practice over two years, rather than one, and undertaking fewer specialist rotations. In addition, there was some uncertainty about the extent to which student pharmacy technicians contributed work to the service which may have off-set the training burden. Whilst the workload

involved in training of pharmacy assistants was relatively high at the time of the study, this was anticipated to decrease once the existing staff had achieved the relevant qualifications to meet new regulatory requirements.

A recommendation to focus the research on NHS hospital preregistration pharmacist training was agreed by the executive group of the Welsh chief pharmacists' committee. The next stage of the work would be aimed at examining NHS hospital preregistration pharmacist training practices across Wales in order to understand the reasons for variations in training workload and identify practices that may optimise the use of available training capacity.

Conclusions

The work described in this chapter has estimated Welsh NHS hospital pharmacy training workload dedicated to Cardiff University postgraduate diploma pharmacist training and training for novice pharmacy staff to meet registration requirements.

This was the first time that comprehensive data about training workload for pharmacy staff had been collected across Wales and was the largest study of its type conducted in Great Britain.

The study achieved a 100% response rate, ensuring that the results were representative of the whole population of NHS hospital pharmacy training sites in Wales.

The range of estimates of training workload varied widely between training sites. Reasons for this were not clear. Preregistration pharmacist training was highlighted as the priority for further study. It was necessary to gain a better understanding of the training practices that existed in order to identify those that made efficient use of trainer resource.

The next chapter will explore preregistration pharmacist training practices and develop hypotheses to explain variations in training workload between training sites.

Chapter 4

Exploring preregistration pharmacist training practices

Introduction

Descriptive research undertaken from 2006 to 2007 and presented in Chapter 3 estimated training workload spent supporting NHS hospital preregistration trainee pharmacists in Wales to be 6.5 hours per week per trainee. It was noted that the range of estimates was wide (range 3.0 to 14.9). This chapter describes research that was undertaken in 2008 to generate theories that may explain the variation in preregistration pharmacist training workload between sites.

Chapter outline

This chapter begins with an explanation of how preregistration pharmacist training was organised in NHS hospitals in Wales and why workload estimates may have varied between sites. This is followed by a review of the literature on training workload for novice healthcare professionals. The literature review is used to generate theories or "emergent hypotheses" that could provide explanations for variation in training workload. An explanation of the role of the literature in generating theory is provided in the methods section of this chapter. The chapter then describes case study research that was undertaken to explore preregistration pharmacist training workload in Wales. In this chapter, the results and discussion of the research are presented together in a question and answer format based on the emergent hypotheses as this format was considered most likely to aid understanding of the findings. This chapter concludes with a discussion about the key findings and the process of conducting the research.

Context for this study

In 2008 standards for preregistration pharmacist tutors and programmes were set by the Royal Pharmaceutical Society of Great Britain (RPSGB). (135, 142) Within these criteria, employing organisations could deliver training that was appropriate to their circumstances and priorities. In Wales, the NHS hospital trainees all attended a programme of residential courses provided by the Welsh Centre for Pharmacy Professional Education (WCPPE) and there was

an annual preregistration pharmacist tutors' study day. Other than that, training was delivered independently at each hospital site. As a result, training practices may have differed considerably between sites. A number of intrinsic and extrinsic factors could have had an impact. Intrinsic (unchangeable) factors included features such as hospital size, the range of clinical activities undertaken, (143) geographical location, workload and staff levels and/or experience. Extrinsic factors included the format of the training programme, the range of training opportunities available, the role and remit of the trainee and the skills, experience and/or knowledge of the trainers. (144-146) As a result, whilst there was a framework within which preregistration pharmacist training was to be delivered there was considerable scope for variation of practice. This variation was recognised by the research team at the Centre for Pharmacy Workforce studies. In 2007 they suggested that rather than being concerned about whether there were sufficient training posts, the debate should now focus on the role, content and purpose of preregistration pharmacist training placements. (147)

Literature review of factors that may have affected training workload

A search of the English language literature on healthcare and education was performed to find examples of practices that could affect training workload in relation to the training of novice healthcare professionals. The journal databases SCOPUS (including MEDLINE) (1996-2008); EMBASE (1996–2008), Web of Science (1970-2008); British Educational Index (BREI) (1975-2008); and Educational Resources Information Center (ERIC) (1966-2008) were searched using combinations of the following search terms:

- pharmacist, pharmac*;
- preregistration, trainee, novice, preceptee, apprentice;
- teacher, tutor, supervisor, trainer, mentor, preceptor;
- professional/competency-based/on-the-job/clinical/work-based/vocational and (education/training);
- medicine and health*
- workload.

The search terms were further combined to focus the search results where necessary. Reference lists and bibliographies were also reviewed.

The websites of the RPSGB, NHS Wales, the Guild of Healthcare Pharmacists and the United Kingdom Clinical Pharmacy Association were searched for conference reports and other relevant publications.

LITERATURE REVIEW FINDINGS

Several factors, identified from the literature review, were noted to have an influence on training workload. These were:

A. Use of prior learning

B. The role of the trainees in their own learning

C. The ratio of trainees to tutors/trainers

D. Access to different role models

E. Communication with and between trainers

F. Duration of ward-based training rotations

G. Degree of specialisation

H. Trainees' contribution to service delivery

I. Appropriate responsibility

J. Competency-based learning

K. Sharing of materials

L. Use of information technology

Each factor is discussed in turn, leading to the generation of emergent hypotheses.

A. Use of prior learning

In the United States of America (USA) a project to determine the prior learning needs of public health practitioners[37] was used to enable people to access appropriate training resources. Learners who underwent assessment or self-assessment to identify their learning needs could avoid the need for duplication or repetition of previous material. (148) This was a practical way of determining the priorities for training, especially if resources were limited. Similarly, in reviewing a post-doctoral dentistry course it was recognised that learners had dramatically different educational backgrounds, related to the

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[37] the detail of which profession groups this included was not specified

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topic area, skills, knowledge and levels of interest. (149) This affected the extent to which they needed to undertake various elements of the programme.

In 2008, the intake into preregistration pharmacist training programmes in Great Britain was relatively standardised, in that preregistration trainee pharmacists all had to have completed an MPharm degree or an overseas pharmacist assessment programme (OSPAP) at a GB higher education institution. However, beyond that, the experience and knowledge of trainees may have differed significantly. (150) Some trainees may have been mature students with potentially relevant previous work experience; others may have already covered certain areas of practice as vacation students or during employment as pharmacy technicians or Saturday assistants prior to completion of their degree. Trainees with relevant prior experience may have required less training workload.

EMERGENT HYPOTHESIS A: Variations in training workload could be explained to some extent by the degree to which sites took prior learning into account to avoid repetition of previously covered material.

B. The role of trainees in their own learning

The degree to which the learner was involved in planning and directing their own learning may affect the workload of the trainer; in 2000, when describing the training of preregistration house officers, Challis and Batstone (151) suggested that the role of a medical trainer need not be time-intensive, as long as the learner took responsibility for their own learning. They suggested that where this was achieved, the supervisory role only required around one hour per week. However, they acknowledged that creating an environment in which trainees were self-directed was not always easy.

A review of teaching styles in medical education identified two different models of educator; those that were supportive of student autonomy in learning and those that were controlling. (152) It was noted that when educators were supportive of autonomy, their students became autonomous learners and behaved with feelings of willingness and choice. They chose to read and study because it was interesting and relevant to them. Trainees who were controlled felt a degree of demand, rather than a sense of choice, and undertook assignments because they should, rather than because they

wanted to. Trainers who supported autonomous learning did not necessarily spend less time with their trainees, but autonomous and controlled motivators varied greatly in how effective they were at achieving learning. This issue may be of relevance in pharmacy education. In an undergraduate pharmacy course in Virginia, USA, it was noted that compared with other healthcare trainees, pharmacy students were not as able to accept responsibility for their own learning and found it hard to learn in the clinical environment, preferring instead, to rely on others to "teach" them in isolation from the patient and the clinical setting. (153) Trainees who were self-directed, rather than dependent on their trainers to plan and direct their activities may have required less training workload.

EMERGENT HYPOTHESIS B: Variations in training workload could be explained to some extent by the degree to which tutors and trainers supported trainees to take responsibility for their own learning.

C. Ratio of trainees to tutors/trainers[38]

Some researchers focussed on the number of trainees that each trainer had responsibility for. A review of PharmD clerkships in the United States of America found that the most common ratio of trainee to trainer was one to one, however, higher ratios were documented, with up to four trainees per trainer being reported. (144) Having contact with one supervisor was seen as beneficial for UK medical students who had moved from a hospital environment into general practice, although some did not like one-to-one supervision and found it claustrophobic. (154)

In hospital practice in Great Britain, the ratio of preregistration trainee pharmacists to approved preregistration pharmacist tutors was variable. The research described in Chapter 3 and shown in Tables 3.5 and 3.6 had identified that in Wales there was a mean of 2.5 approved NHS hospital preregistration pharmacist tutors per training site (range 0-9)[39] and a mean of 2.2 preregistration trainee pharmacists per site (range 0–5). In 2008 the

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[38] The literature uses a number of terms to describe tutors and trainers. In preregistration pharmacist training in GB, the formal training role is described as an "approved preregistration pharmacist tutor". For the purposes of this study, all others involved in training are called "trainers".

[39] One site did not train preregistration trainee pharmacists and so they did not have an approved preregistration pharmacist tutor in post.

RPSGB preregistration tutor workbook (142) required a ratio of pharmacists (not tutors) to preregistration trainee pharmacists of at least 1:1. This allowed for the existence of numerous models of preregistration pharmacist tutoring and, particularly at large hospitals, it was possible for one pharmacist to be the approved tutor at a site with several preregistration trainee pharmacists. The approved tutor could either be personally responsible for training and assessing several trainees or could delegate supervision and training responsibilities to one or more pharmacists in the team who provided feedback in order for the approved tutor to conduct formal appraisals.

It may be reasonable to predict that as the ratio of trainees to approved tutors increased, the amount of time that a tutor could dedicate to a particular trainee would be reduced. A number of factors that had been identified as important for effective supervision (155) may have been affected by the ratio of trainees to tutors:

- the nature of the relationship between the tutor and the trainee;
- availability of clear feedback;
- being directly observed and observation of their tutor;
- the trainee being given responsibility;
- the tutor acting as a role model;
- joint problem-solving.

In particular, tutors need to be able to spend sufficient time observing their trainees in a practice setting in order to be in a position to delegate appropriate levels of responsibility. (155) This was less likely to be possible when the tutor was responsible for several trainees or had other duties that meant that they delegated part of their tutoring role to other trainers.

EMERGENT HYPOTHESIS C: Variations in training workload could be explained to some extent by the degree to which trainees had access to a supervisor for sufficient time that they were in a position to delegate appropriate responsibility.

D. Access to different role models

As well as having feedback from a consistent source, trainees may benefit from having a number of role models to observe and mould their own practice from. Involvement of more people in the training process could have a positive or a negative effect on training workload.

Increasing the number of people who were involved in training had been used to share responsibility more widely. (156, 157) For example, nurse trainees were noted to have benefitted from working in practices where there was a "community of learning", whereby everyone learnt from each other, regardless of seniority. (158) This environment helped trainees to become socialised in the placement and staff were reported to be more open to new ideas and collaboration. New trainers were said to have benefitted from the satisfaction of having a learner working alongside them and those who had previously been heavily involved appreciated sharing the workload.

A review of clinical training in radiography in England used the nominal group technique to gauge the views of trainers about what factors impacted on the quality and capacity for training. (159) Whilst the most important factors were considered to be staff attitude, motivation and commitment towards learners; sharing the burden of training was considered beneficial for morale.

In a school of pharmacy in Alabama, USA, (160) it was considered beneficial for pharmacy trainees to have several role models in order to help mould their own views of professionalism and approaches to practice. Other strategies to involve more people in the training process included the use of recently-qualified pharmacists, as suggested in Australia by Moles et al (161) and building links with an academic setting through the use of teacher practitioners, as had been used by some universities in Great Britain. (50) These practices involved people who may better understand the perspective of the trainee – having recent experience of the undergraduate environment themselves.

In summary, practices that involved several people in the training process may have helped to share the training workload, provided trainees with a broad selection of role models on which to mould their own practice and improved the morale of trainers. However, involvement of more people in the process

could lead to problems with continuity and repetition and so effective communication between those involved would be important.

EMERGENT HYPOTHESIS D: Variations in training time could be explained to some extent by the degree to which sites exposed trainees to a number of different role models rather than relying on a limited number of specialist trainers[40].

E. Communication with and between trainers

In 2003, a survey of supervisors of preregistration house officers (PRHOs) and their trainees indicated that 55% of PRHOs and 32% of supervisors were not familiar with their roles and responsibilities as outlined in "The New Doctor", the training guide produced by the General Medical Council. (162) It was not known whether this would also be the case in a similar sample of pharmacy trainers. In 2008 there was no requirement for preregistration pharmacist tutors to undergo any formal training, although tutor roles were outlined in the RPSGB tutor manual. (142) Trainers, who were not tutors but who were in contact with the trainees, may not have had any information about what was expected. Whilst most pharmacist trainers may have had some understanding of the role of a preregistration trainee pharmacist from their own experience, this may have been some time ago. There had been several changes to preregistration pharmacist training over the preceding 20 years, including the introduction of the registration examination and competency-based training in 1993 (163, 164) and new performance standards in 2001. (53) Some trainers may not have been aware of all the changes and may not have been familiar with what the trainee needed to know or do. In addition, some training was undertaken by pharmacy technicians who would have had quite different experiences of being trained themselves.

EMERGENT HYPOTHESIS E: Variations in training workload could be explained to some extent by the degree to which sites ensured that trainers[41] understood their role and had knowledge of how their training contributed to the overall objectives of the trainee.

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[40] Trainers were those who were involved in supporting preregistration trainee pharmacists but were not RPSGB approved preregistration pharmacist tutors.
[41] Trainers were those who were involved in supporting preregistration trainee pharmacists but were not RPSGB approved preregistration pharmacist tutors.

F. Duration of ward-based training rotations

The duration of ward-based (clinical) pharmacy training rotations was explored to assess the impact on training workload. In 1996, Beck et al recommended that Introductory Practice Experiences (IPEs) should be longer than four to six weeks, which was the norm, on the basis that the practice of pharmaceutical care involved assuming responsibility for management of drug related problems over time. (165) In 2000, Abel et al (144) undertook a review of PharmD clerkships across USA and found that they ranged in length from four to fourteen weeks, but that 82% were for six weeks or less. Pharmacy students who were exposed to multiple practice sites required orientation at each site. This increased training time and reduced productivity for host staff.

Carter et al (115) developed an algorithm that attempted to measure learning and training for PharmD clerkships in Arizona. It was noted that some activities required intensive supervision during the training phase which diverted trainers away from their other tasks, but that longer placements allowed trainers time to catch up with their work as the trainee did not require as much supervision as time progressed. This could have been beneficial to the trainees who could gain confidence by taking more responsibility. However, it was recognised that longer durations would limit variety and they concluded that training sites need to decide how to balance depth and variety.

Training programmes that included training rotations that were long enough that they allowed trainees time to practise their skills before moving on to a new area may have required less training workload than programmes that had shorter duration rotations. The initial phase of each ward-based rotation involves familiarisation with the clinical environment and the patient population, rather than focussing on skills development. Data described in Chapter 3 (Table 3.12) illustrated that preregistration trainee pharmacists spent a total of a mean of 15.2 weeks (range 8–23 weeks) on clinical rotations, but data about the extent to which this was spread over different wards were not obtained.

EMERGENT HYPOTHESIS F: Variations in training time could be explained to some extent by the degree to which sites lengthened the duration of rotations, rather than providing a high number of short duration rotations.

G. Degree of specialisation

Increasing demand for hospital pharmacy training placements led to a review of the types of clinical services being offered by hospitals across the USA and compared this to the range of university programmes that each hospital was affiliated to (e.g. PharmD, Bachelor of Science in Pharmacy, or other healthcare courses). (143) It was found that the wide range of practices that existed in hospitals made it difficult for educational institutions to predict what the trainees would get from their placement experience and that trainees who were exposed to one model of practice may still experience a steep learning curve when they moved to another setting. The report authors commented that: "the pharmacy profession still did not have a clear, consistent and easily identifiable practice methodology of pharmaceutical care within its teaching hospitals". They suggested that the focus of pharmacy education should be on core skills known to improve patient outcomes, rather than on the acquisition of specialist knowledge or experience.

In 2006 Kassam (146) reviewed the learning environment for community pharmacy advanced pharmacy practice experiences (APPEs) in British Columbia to establish whether they provided the opportunities for trainees to develop the skills required of new pharmacists. Students were most frequently engaged in dispensing of medications, rather than activities that fostered development of professional care competencies. It was noted that sophisticated skills such as maintaining pharmacist–patient relationships, assuming responsibility for the management of drug-related problems and follow up could only be developed over time. Kassam recommended increasing the length of rotations from 4 weeks to 8 weeks.

The degree to which training is aimed at developing core skills that are common to all pharmacy practice settings, compared with providing specialist knowledge will have an impact on training workload.

EMERGENT HYPOTHESIS G: Variations in training workload could be explained to some extent by the degree to which sites delivered training that was focussed on core skills rather than delivering specialist knowledge.

H. Trainees' contribution to the work of the service

In 1997, the General Medical Council (GMC) stated that the postgraduate year of medical education aimed to enable preregistration house officers to "learn to become doctors by providing a service". (166) In subsequent years with the introduction of the European Working Time Directive (EWTD), (167) the guidance was revised (168) such that the first year of practice was intended to be a training year.

The transition from being a medical student to a doctor is an issue that was the subject of debate. (102, 169, 170) The reduction in junior doctor's hours as a result of the EWTD had created tension and dissatisfaction amongst some trainees because they perceived that they were not being trained and instead were being used as workers. The notion of a training/service continuum was proposed, (102) whereby the activities that a junior doctor undertook were not exclusively categorised as either training or service delivery. Instead, it was recognised that there was a progression. A novice undergoing a new task was perceived as lying towards the training end of the continuum, but as experience was gained, performing the task would move towards the service delivery end. The role of the supervisor would alter over time, from being a demonstrator, through to being remote from the trainee, which was deemed essential for the trainee to build confidence. This model where training and service delivery were not considered as mutually exclusive activities was helpful in understanding how trainee roles changed over time, and hence how training workload altered as a result. It also highlighted that trainees may not have recognised the value of learning by doing.

A comparison of the nursing "cadet"[42] scheme with a standard nursing degree programme in England highlighted the value of equipping trainees with the skills to perform some tasks at the start of a training programme. (171) Nursing students who had previously been cadets described how having some work-based skills had provided them with confidence and "immediate currency" in the work place, so that they felt that they were a useful part of the clinical team. It was useful for trainees to be able to perform functions that

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[42] Cadet schemes provided an alternative route of entry to a number of health professions in England. They offered supervised work experience and assessment leading to potential permanent employment or entry onto a preregistration training scheme.

made them feel able to make a worthwhile contribution to the workplace, as this built confidence. However, it was noted that the aim should be for trainees to spend time performing roles that developed their professional competence, rather than purely contributing to service delivery.

Austin described how pharmacy students in Toronto, Canada were sometimes a burden to practice because they were not necessarily allowed to contribute to practice at a level commensurate with their skills and abilities. (157) They were perceived as learning at the expense of the organisation. At the same time, there was a problem with professionalization of the trainee who "goes from being a student to a pharmacist relatively quickly and generally after passing a series of exams that do not actually assess that individual's ability and willingness to assume responsibility". Austin argued for the development of practice placement experiences that placed students as an integral part of the workforce.

The contribution that pharmacy trainees made to the work of the service had been explored by Slack and Draugalis (108) for the purposes of estimating the impact of training at PharmD clerkship sites in Arizona, USA. They defined two models of trainee – an employee model and a non-employee model. In the employee model, the trainee functioned as a member of staff and contributed work to the service. In the non-employee model, the student could not function independently and always required a practitioner's supervision. Abel recommended that training sites should implement the employee model, encompassing as many activities as legally possible. (144) Trainees needed to work in the employee model in order to be able to make an appropriate contribution to service delivery.

EMERGENT HYPOTHESIS H: Variations in training workload could be explained to some extent by the degree to which sites ensured that trainees made an appropriate contribution to the work of the service.

I. Appropriate responsibility
Berger et al (160) asserted that the amount of responsibility that undergraduate pharmacy students in the USA had throughout their entire undergraduate experience was important. If students were not given enough responsibility they did not develop self-confidence because they never really

learnt if they could do what needed doing independently. This was supported by Derrick et al, (102) who, when considering senior house officer training in the UK, found that "supervision is important – but also, a lack of supervision is important later on for developing confidence". There needed to be gradual delegation by the tutor or trainer in order for the trainee to assume responsibility. However, a note of caution was sounded by Kilminster (155) who found that "inadequate supervision of junior doctors led to a reduction in levels of patient care, although some trainees claimed to benefit from the experience that a lack of supervision gave them".

Preregistration medical trainees described how working on their own in general practice had helped them learn more effectively compared with when they had been part of the medical team in the hospital. They enjoyed having greater autonomy. (154, 172) This was illustrated by one trainee who described how being reliant on their trainer to make decisions had hindered their learning and said "you don't have to think 'cos you're not responsible". (154)

Turner et al developed a scheme where pharmacy students on advanced pharmacy practice experiences (APPEs) in Colorado, USA went into practice settings to run services. (173) They argued that pharmacy students should be given greater degrees of responsibility, similar to final year medical students. This scheme increased placement capacity without having a detrimental effect on training workload or capacity. It was highly successful, but did require trainers to have a shift in attitude about the delegation of responsibility. It was recognised that pharmacy practitioners struggled to delegate responsibility to trainees, because they did not have this level of responsibility themselves when they were being trained. Also, as Austin had noted, pharmacists may be reluctant to delegate tasks that they are legally responsible for. (157) There were parallels with GP preregistration house officer training in the UK – where trainees performed patient consultations independently but were unable to sign prescriptions and had to interrupt their supervisor frequently during their own consultations. (138, 174)

EMERGENT HYPOTHESIS I: Variations in training workload could be explained to some extent by the degree to which sites delegated appropriate levels of professional responsibility to trainees.

J. Competency-based learning

Bond and Wilson (175) questioned the value of competency-based assessments for information management & technology professionals in England and argued that whilst portfolio-based learning was important for professional development, competency-based assessments did not cover higher levels of practice well. In particular, there was difficulty in making assessments against non-standard events. They did not consider competency-based assessments to be a robust form of assessment of professional mastery and clinical performance. This sentiment was summed up by Snadden, (176) a critic of the increase in portfolio-based learning in medical education in the UK, who stated that *"until we can make a mental shift that allows us to include a more holistic approach to assessment, one which values the development of individuals over a period of time, we will continue to struggle to measure the unmeasurable and may end up measuring the irrelevant because it is easier"*. This argument was useful to consider in the context of pharmacy training where an increase in the amount of competency-based training had been experienced, primarily, but not exclusively, for pharmacy support staff in Wales. The same approaches were sometimes being used to assess preregistration trainee pharmacists. Whilst this may have been relatively easy to implement, it may not have been appropriate.

EMERGENT HYPOTHESIS J: Variations in training workload could be explained to some extent by the degree to which sites focussed on higher levels of learning and professional development rather than competency-based learning.

K. Sharing of materials

Sharing of training materials had been used to facilitate the training process and reduce the burden on individual trainers. Scallan (177) described a number of strategies that were used by GP trainers to manage the workload involved in training GP preregistration house officers (PRHOs). Several GPs described running mixed group tutorials with other participants (e.g. registrars and medical students) within the same practice. Others described running tutorials with other GPs in the same locality, which had the benefit that the GPs could exchange ideas and the trainers saved time because they did not need to repeat the training as many times.

Occupational therapists were surveyed to find out what would help to create capacity in the NHS in Wales. (178) The views of respondents to the survey indicated that the most effective ways of building capacity were thought to be things that provided more support for the trainers, for example, placement coordinators, trainer networks and e-mail support.

Duncan-Hewitt and Austin (156) developed a concept of communities of practice in Canada and the USA where the various disciplines in pharmacy worked together across boundaries to develop mutual expertise and understanding. For example, academic and practice-based pharmacists could derive mutual benefit from learning from each other. Students could benefit from the greater cohesiveness of the pharmacy profession by developing a greater sense of professional identity.

In summary, where training was being undertaken at a number of sites, by different trainers, training workload may have been reduced by sharing the training materials, the expertise or the delivery of the training.

EMERGENT HYPOTHESIS K: Variations in training workload could be explained to some extent by the degree to which sites shared materials and resources with other centres.

L. Use of Information Technology (IT)

In 2008, new learning and communication tools were emerging that could supplement some of the traditional methods of teaching. The traditional methods of teaching used in undergraduate pharmacy education in USA, such as reading lists and delivery of content-rich lectures had been criticised because whilst they were good at providing factual information, they did not challenge the students to develop critical thinking skills. (179) In contrast, the information technologies that had been developed appeared to have several advantages including being self-paced, interactive, providing immediate feedback and accommodating a variety of learning styles. In addition to the andragogical benefits, information technology had the potential to have a beneficial effect on training workload. Walton described the benefit of a skills laboratory for ultrasound training as access to ultrasound machines in the clinical setting was becoming increasingly difficult. (180) This allowed trainees to acquire basic skills away from the workplace in a relaxed atmosphere which

was more appropriate for training purposes and avoided the danger of exposing patients to risk through trainee errors.

Use of IT in learning may be better suited to some people than others. Sargeant (181) assessed the views of physicians about on-line medical education and found that they based their judgements on comparisons with face-to-face programmes, using measures such as the quality of the content, the educational design and the quality of interpersonal interaction. The views were also moderated by participants' prior experience of IT.

EMERGENT HYPOTHESIS L: Variations in training workload could be explained to some extent by the degree to which sites had adopted the use of information technology for training purposes.

Summary of emergent hypotheses

The literature review identified a number of possible theories (emergent hypotheses) about practices that may have an impact on training workload and capacity. The emergent hypotheses are summarised in Table 4.1.

It was not known initially to what extent NHS hospital pharmacy training sites in Wales used any of the practices described by the emergent hypotheses to deliver their preregistration pharmacist training and if so, what impact that had on training workload. Research was planned to explore preregistration training practices and enable comparisons to be made with the theories generated by the literature review.

Table 4.1   Emergent hypotheses generated from the literature

	Variations in training workload could be explained to some extent by the degree to which:
A	sites took prior learning into account to avoid repetition of previously covered material
B	tutors and trainers supported trainees to take responsibility for their own learning
C	trainees had access to a supervisor for sufficient time that they were in a position to delegate appropriate responsibility
D	sites exposed trainees to a number of different role models rather than relying on a limited number of specialist trainers
E	sites ensured that trainers understood their role and had knowledge of how their training contributed to the overall objectives of the trainee
F	sites lengthened the duration of rotations, rather than providing a high number of short duration rotations
G	sites delivered training that was focussed on development of core skills rather than delivering specialist knowledge
H	sites ensured that trainees made an appropriate contribution to the work of the service
I	sites delegated appropriate levels of professional responsibility to trainees
J	sites focussed on higher levels of learning and professional development rather than competency-based learning
K	sites shared materials and resources with other centres
L	sites had adopted the use of information technology for training purposes

Aim and objectives of this study

Research was planned which aimed to explore reasons for variations in preregistration pharmacist training workload in NHS hospitals in Wales. The objectives were to:

- develop a deeper understanding of preregistration pharmacist training practices at the case study sites;

- identify training practices that may have an influence on training workload based on findings from the literature and the case study evidence.

Method

Local Research Ethics Committee Approval

An application was made to the Research and Development Department of Pontypridd & Rhondda NHS Trust for appropriate Local NHS Research Ethics Committee approval and to add the project on to the Trust's research register. The project was deemed not to require full Local NHS Research Ethics Committee approval. The Research Director agreed to include the project on the Trust's research register. Notification that this process had been completed was received in April 2008 (Appendix 12). Cardiff University agreed to be the sponsor for the research (Appendix 13).

Study design

The model for development of study design proposed by Black at p27 (74) and summarised in Figure 4.1 is used as a framework for the design of this study.

State research questions	→	Select research approach	→	Select research method	→	Identify population and sample	→	Design methods
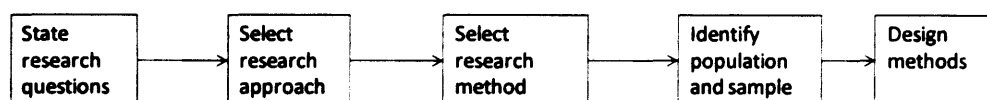
Figure 4.1 Stages of planning a study (adapted from Black, 1999) (74)

The purpose of the research leads to the research question. At this stage in the study it was necessary to consider possible reasons for a variation in training workload and so an exploratory study approach was required. (48) Punch explained at p16 (48) that all studies are tied to theory. They can either be used to test theory "theory first" or to build it "theory after". In "theory first" studies, hypotheses are deduced and the aim of the research is to test them. In "theory after" research the aim is to generate theory from the data that are collected. Theory generating rather than theory testing approaches are more suitable when exploring new areas, as was the case in the present study. (48) The purpose of the research was to develop theory about training practices that may have had an impact on training workload.

Research questions

In this study the research questions were: "Is there a relationship between the use of certain training practices and training workload?"; In order to answer

this, the specific questions were: "Were training practices that had been identified in the emergent hypotheses used at the case study sites?"; "Did any other training practices employed at case study sites have an influence on training workload?" and "Did use of the any of the training practices explain the differences in training workload between case study sites?".

Research approach

Generally, the selection of the research approach is influenced by the type of data that need to be generated and the purpose that the data are required for. (48) In this study, the questions were qualitative in nature and so a qualitative approach, which is a favoured approach for theory generation, was used. (48)

Selection of research strategies

Qualitative strategies include case studies, ethnography or grounded theory. (48) Yin (182) defined a case study as being "an empirical inquiry that investigates a contemporary phenomenon within its real life context, especially when the boundaries between phenomenon and context are not clearly evident". They are suitable when there are complex relationships between the phenomena being described with the context in which it occurs. (131) Case studies can either focus on a single case or multiple cases. Multiple case studies are useful when the focus is to study phenomena across cases, for example to make comparisons. (48) In contrast, ethnography studies are an in-depth study of phenomena from the specific viewpoint of participants in the setting. (48) Grounded theory has an explicit purpose to generate theory. However, in the grounded theory approach, no theories are developed prior to undertaking the research but are generated from the data. Stages of data collection and analysis are alternated to build up a picture. (48) In the present study a comparative approach to understand variation between sites was needed indicating that case study research was an appropriate research strategy.

Eisenhardt (183) asserted that prior to the conduct of the case study the researcher should formulate a research question and identify potentially important variables by reference to the literature. Yin (182) stated that this theory development process is an essential part of the design phase of case studies. Emergent hypotheses from the literature and case studies findings

are compared to seek conflicting or similar findings. The emergent hypotheses become the output of the research. (48)

Six different types of case study research were identified, based on a 2 x 3 matrix. (184) Firstly, case study research could be based on single or multiple cases. Secondly, the case study could be exploratory, descriptive or explanatory. An exploratory case study would be aimed at defining a hypothesis or testing a research tool; a descriptive case study would present a description of a phenomenon within its context and an explanatory case study seeks to present a rationale for how events happened. The strategy selected for the present study was an exploratory, multiple site case study.

Selection of case study information sources

In case study research, multiple sources of data and multiple data collection methods are used. Facts or phenomenon are then corroborated by triangulating the data. (182) Case study research can use up to six major sources of information. A description of each source of information and their advantages and disadvantages in relation to this study is provided:

1. **Documentary evidence** This includes data in the form of letters, meeting notes and administrative documents. It can also include audio and visual evidence. Training programmes would be an example of documentary evidence. This type of evidence is classed as a primary inadvertent source, in that it was produced within the timescale of the study, but had been produced for a different purpose. (78)

An advantage of documentary evidence would be that it would be relatively unobtrusive to obtain as it already exists. The data may be rich, but there may be irrelevant data as the data would not be collected for the study purpose. Collection and reporting of documentation may be subject to selection bias. (182) Documentary evidence, in the form of training programmes and trainee rotas were identified as a source of data to be used in this study.

2. **Archival records.** This includes data such as surveys, lists of staff, activity reports and personal records. Often the files are held as computer records.

Archival records have similar advantages and disadvantages to documentary evidence but may be more precise and quantitative. (182) In this study no archival records were identified that would contribute relevant information.

3. **Interviews.** Case study interviews are conversations with participants about the setting and phenomena. Whilst the purpose of the case study may be to ask <u>why</u> something happens, the interview may be less threatening if the questions are about <u>how</u> something happens, rather than seeking justification. The interview evidence should be considered as "verbal reports" that need corroborating with other sources. (182)

Advantages and disadvantages of interviews were discussed in Chapter 2. In case studies they provide important insights into the situation as they are targeted at the case study topic. In this case study, interviews were used to gather insights from a number of stakeholder perspectives.

4. **Direct observation.** This involves a field visit to the case study site(s) to see relevant behaviours or environmental conditions. Observation can range from formal activities, such as recording the incidence of certain events, to casual activities, such as incidental observations made when visiting a site to undertake interviews.

Observations have the advantage of covering events in real time and in their context but are time-consuming. (182) Casual activities can include taking of photographs at the case study site to help convey characteristics (such as the condition of training facilities). In this case study site visits were arranged, primarily to conduct the interviews. They provided an opportunity for direct observation allowing for greater understanding of the study settings.

5. **Participant observation.** This involves the investigator being involved in the case study situation to experience it from within.

Access to this type of experience can give the researcher a unique insight into the phenomena being studied but can be time-consuming to achieve and may lead to significant bias which may jeopardise the credibility of the case study. (182) Participant observation was not selected for this study as it was not

feasible to arrange at multiple sites within existing resource and may not have revealed relevant data.

6. **Physical artefacts**. This may include a product of a process, a tool, or other physical evidence.

They may be useful if there are cultural or technical facets to the study, but availability may be problematic. (182) In this study, no physical artefacts that would be of relevance to the study aim were identified.

In summary, the information sources selected for use in the present study were documentary evidence, interviews and direct observation.

Population and sample

Yin argued that case study samples should be selected either to demonstrate replication or contrast. (182) Where this is not found, further samples should be sought and tested, potentially until saturation is reached. In contrast Eisenhardt (183) suggested that while this was the ideal approach, in some cases, case study samples may all be selected in advance. This may be necessary when resources dictate that a limited number of cases could be included, or when cases needed to be developed in parallel. In the present study all case study sites were selected in advance in order to be able to make the best use of the available resources when planning visits.

All NHS hospitals in Wales that delivered preregistration pharmacist training in the period of August 2007 to July 2008 were eligible for inclusion in the case study. Of the seventeen training sites discussed in Chapter 3, sixteen met this criterion. Purposive sampling of eligible training sites was used to maximise variation in the sample sites. (48) Selection criteria, developed from data gathered in Chapter 3, were agreed with the Welsh chief pharmacists and their education and training subgroup (Appendix 14). The selection criteria were used to produce a list of study sites. A letter (Appendix 15) seeking the informed consent of selected sites was sent to all study sites. The letter asked that participants agreed to the publication of the names of all participating sites but that identifying details related to the findings would be removed.

Design of case study methods

A case study protocol (Appendix 16) was developed to describe the study. The protocol summarised the case study purpose, research questions and data collection procedures. (182) The development of the protocol was a useful way of ensuring that the case study remained targeted and, as this was a multiple site case study, helped ensure reliability.

Case studies may use one or more researchers for data collection. The use of multiple researchers provides a further opportunity to triangulate the data by comparing results between each researcher. However, the use of a single researcher can provide the opportunity of being able to see theories as they emerge and be testing for these in subsequent cases. (183) In this case, a single researcher was used as it would not have been possible to use additional researchers within the available resource.

Case study questions, derived from the emergent hypotheses identified by the literature review were expanded into a series of sub-questions in a question matrix (Appendix 17). The following data collection tools were developed from the question matrix:

a. Documentary evidence:

Preregistration training programmes and rotas were identified as potential sources of evidence describing how training was planned and delivered to provide comparative data about programmes. The documents would be analysed for content and format. They were also used to identify points of further information or clarification to be addressed during the site visits.

b. Interviews:

Semi-structured interview schedules were developed from the question matrix for use with:

- the lead preregistration pharmacist tutor[43] at each site (Appendix 18)
- the current cohort of preregistration trainee pharmacists (Appendix 19)
- previous cohorts of preregistration trainee pharmacists (Appendix 20)
- other tutors and trainers at each site (Appendix 21)

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[43] The lead preregistration pharmacist tutor was identified as the respondent who had completed the preregistration training section of the questionnaire described in Chapter 3.

The advantages and disadvantages of various types of interview were discussed in Chapter 2. In this case, semi-structured interview schedules were used for all of the interviews. A one-to-one telephone interview was held with the lead tutor. This format allowed the interviewer to gain detailed information in a relatively controlled format from an individual who was likely to have an in-depth understanding of the training programme. Telephone interviews were used because information from the lead tutors was considered useful in preparing for the site visits and so these needed to have been conducted and analysed prior to the site visits. Although there were disadvantages of telephone interviews, compared with face-to-face meetings, the travel costs and resource required to visit each site on two occasions would have been prohibitive.

The interviews with current cohorts of trainees, previous cohorts of trainees and other tutors and trainers were planned as face-to-face interviews. All trainees from the current cohort at each site were interviewed as one group. The aim was to obtain facts and opinions from current trainees about their training. The trainees from all previous cohorts were interviewed as one group, including trainees from different year groups. This enabled information to be gathered from people who had completed their training. The aim was to gather opinion about the value of the training to professional practice upon qualification. The discussions with other tutors and trainers were used to gather views from individuals less directly involved in preregistration pharmacist training to obtain a wider perspective of the training environment. (75)

The group interviews were useful for gathering data from the required number of people in a relatively economical way and were useful for triangulating data from other sources. (75, 182) It allowed participants to discuss their experiences and perceptions which may have helped with recall and illustrated where there were conflicting and consensus viewpoints. (76) In addition, the group interview format was less intimidating than one-to-one interviews which may have been particularly relevant to the interviews with trainees. (75)

c. Direct observation

The site visits to conduct the interviews provided the opportunity for informal direct observation to develop a deeper understanding of the settings in which

preregistration pharmacist training took place. (182) This may have been useful for noting issues relating to the organisation, for example, the size and facilities of the working space, the activities being undertaken, numbers of staff involved, and a perception of working environment and pressure. Permission to obtain photographic images of the training environment was sought in advance of the visits in case this was needed.

Administration of data collection tools

The following data collection processes were undertaken:

i.   Interviews with lead preregistration pharmacist tutors

Lead tutors were sent an information sheet prior to the telephone interviews as an aid to their preparation (Appendix 22).   Mutually convenient dates and times of the interviews were arranged by e-mail. A telephone interview was held with the lead tutor at each site. The interviews were audio-recorded.

ii.   Site visits (direct observation)

Site visits were used to administer the remaining case study data collection tools. The lead tutors were asked to help in the organisation of the site visits by ensuring that appropriate personnel were available on the day of the visit, and booking a suitable meeting room for the interviews. Lead tutors were asked to give the researcher a 30-minute tour of the department to explain what happened at each site. The site visits were each scheduled to last for 5 hours. Field notes were created to help with recall after the site visits.

iii.   Interviews with current cohort of trainees

Preregistration trainee pharmacists who were trained in Wales in the 2007/8 cohort were provided with an information sheet and consent form (Appendix 23) prior to the day of the site visit and invited to participate in a face-to-face interview with the researcher. Where there was more than one trainee, they were interviewed together as a group. The interviews were audio-recorded with consent.

iv.   Interviews with previous cohort of trainees

Pharmacists who worked in the case study sites and had been preregistration trainee pharmacists in Wales in the 2004/05, 2005/06 or 2006/07 cohorts were provided with an information sheet and consent form (Appendix 23), prior to the visit by the researcher and invited to participate in a face-to-face interview

on the day of the site visit. Where there was more than one trainee available, they were interviewed together as a group. The interviews were audio-recorded with consent.

v. Group interview with other tutors and trainers

A meeting to discuss capacity issues related to delivering preregistration pharmacist training was held during the lunch time period of each visit. The meeting was advertised using a poster (Appendix 24) displayed within the pharmacy departments and attracted a self-selected group. Verbal consent to participate was obtained at the meeting.

vi. Collection of training programmes

Training programmes and rotas were requested from the lead tutors at each site.

Pilot interview

The All Wales Education and Training Pharmacist[44] was interviewed to test the interview schedule to be used for the lead tutor interview and assess the likely duration of the interview. They were selected as they had recently moved from a post as an education and training lead in a Trust in Wales. They had been a participant in the earlier study (185) and so had the required background knowledge to answer the questions without additional explanation. Their involvement did not preclude the site where they had worked from being a case study site as there was a second tutor in post. In their new role they were able to provide advice on the overall approach being taken. In preparation for the interview, they were sent an information sheet (Appendix 25) to allow them to consider the issues prior to the interview.

Recording and analysis of case study data

The interviews were recorded on a Sanyo TRC-6300 dictating/transcribing micro-cassette recorder. The machine was connected to the mains power source during recording. Punch (48) described a framework of analysis of qualitative data which used three main components, data reduction, data

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[44] The researcher left this post in February 2008. The new post-holder was invited to take part in the pilot interview.

display and drawing of conclusions that was used as the basis of the analytical strategy for this study.

1. Data reduction

The lead tutor interviews were transcribed by a secretary with transcription skills and the researcher transcribed the interviews with current and previous cohorts of trainees. The researcher listened to each recorded interview whilst reading the transcripts to check for any transcription errors and edit the final documents. Each transcript was re-read after a period of reflection and individual words and phrases were marked with a highlighter pen. This was the first step in the analysis which segmented the data into smaller parts, retained within their context. Coding was used to attach meaning to related terms, for example, the coding category "role of trainee" included technician, pharmacist, student and professional. The training programmes, rotas, field notes from site visits and photographs were examined in the same way as the interview data for further information for coding and inclusion in the analysis.

2. Data display

The coded words and phrases were clustered together in related groups to build themes and concepts. For example, the theme of "contribution to service delivery" included the coded data groups of "role of the trainee", "trainee workload" and "responsibility". The clusters were displayed using a mind map to aid organisation and grouping of data. It has been suggested that mind-mapping may be a suitable way of undertaking qualitative analysis of interviews because enables recording all features of the interaction – not just the text of the conversation. (186) As well as being able to record the non-verbal elements of the interviews, this technique was particularly useful for documenting the group interviews because it was more efficient. The discursive nature of the group interviews meant that a full transcription of each interview would have been very time-consuming and was not feasible within the available resource.

3. Drawing conclusions

The themes displayed in the mind maps were compared with the emergent hypotheses drawn from the literature to identify conflicting or similar viewpoints. The emergent hypotheses that were supported by the case study evidence and the literature became the output of the research.

Presentation of data

The classic format for presentation of multiple site case studies is a series of single case narratives, followed by a cross case analysis leading to emergent theories. However, an alternative to this approach is to present case study data in a question and answer format, based on the emergent hypotheses. (182, 183) Use of a question and answer format was the approach selected for presentation of this study. This had the advantage that that the case study data would be directly related to the hypotheses allowing the reader to focus on questions of particular relevance.

Results and Discussion

CONDUCT OF CASE STUDIES

Site selection

Selection criteria (Appendix 14) were used to identify eight case study sites from a total of sixteen training sites in Wales. A list of the case study sites is shown in Table 4.2. A map of Wales showing the cities and towns where the NHS hospitals are located is included as Appendix 9.

Table 4.2   Case study sites (in alphabetical order of city/town name)

City/town	Hospital Name	Trust
Aberystwyth	Bronglais Hospital	Ceredigion NHS Trust
Bangor	Ysbyty Gwynedd	North West Wales NHS Trust
Cardiff	University Hospital of Wales & Llandough	Cardiff & Vale NHS Trust
Haverfordwest	Withybush Hospital	Pembroke & Derwen NHS Trust
Llantrisant	Royal Glamorgan Hospital	Pontypridd & Rhondda NHS Trust
Newport	Royal Gwent Hospital	Gwent Healthcare NHS Trust
Rhyl	Glan Clwyd Hospital	Conway & Denbigh NHS Trust
Swansea	Morriston Hospital	Swansea NHS Trust

The selection criteria were used to maximise variation in the case study sample. Table 4.3 provides information about key features of the case study sites. The sites were allocated unique site codes (A-H) in order to preserve

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anonymity. With the exception of Tables 4.2 and 4.3, the site codes are used throughout this chapter.

Table 4.3   Case study site parameters

Case study site number[45]	1	2	3	4	5	6	7	8
No of pharmacists (headcount)[46]	25	20	29	14	6	92	31	25
No of technicians (headcount)	31	22	35	8	5	88	21	27
No of diploma tutors	14	10	12	9	2	52	20	10
No of diploma trainees	5	3	4	3	2	9	4	4
No of preregistration pharmacist tutors	3	1	9	1	2	4	2	4
No of preregistration trainee pharmacists	3	3	3	2	1	5	3	3
No of NVQ assessors	9	4	5	2	2	23	6	4
No of student technicians	5	6	4	3	2	10	3	4

Pilot interview

A pilot interview with the All Wales Education and Training Pharmacist took place on 13th May 2008. The interview lasted 2 hours 05 minutes, which was considered to be too long. Two questions that produced information that was not as relevant to the research were removed. They were

- "How do you decide what is included in your training programme and how to deliver it?" which had prompted a detailed answer that was not particularly relevant to the research question.

- "How do you review the trainees' documentation and prepare for an appraisal?". The answer indicated that whilst this element took up a lot of the trainees' time the tutor found it helpful. Assessment and documentation was a formal requirement of the RPSGB and so recommendations for change to this aspect would be outside the scope of this study.

One question was changed from an open to a closed question:

- "What teaching methods are used?" was replaced by "Do you run a programme of tutorials?" This produced clearer responses but it was

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[45] Labelled 1 – 8 , not A-H in this table to preserve anonymity
[46] Headcount, not whole time equivalents (WTEs)

recognised that this may have led the respondents. Other details about their teaching methods may have been missed.

Lead tutor interviews and site visits

A series of eight telephone interviews was conducted with the lead tutors from each of the case study sites. Visits were arranged at seven of the eight case study sites. It was not possible to arrange a visit to site F because no meeting room was available to undertake the interviews. A telephone interview was arranged with the current cohort trainee to capture some data from this site. The dates and duration of each of the interviews and dates of site visits are shown in Table 4.4.

Table 4.4   Dates and duration of lead tutor interviews and dates of site visits (in alphabetical order of site code)

Site Code	Date of lead tutor interview	Duration of lead tutor interview	Date of site visit
A	12 June 2008	1 hr 40 mins	14 July 2008
B	02 July 2008	1 hr 50 mins	7 August 2008
C	23 June 2008	2 hrs 10 mins	9 July 2008
D	11 June 2008	2 hrs 0 mins	10 July 2008
E	25 June 2008	1 hr 40 mins	8 August 2008
F	16 June 2008	1 hr 50 mins	No visit
G	19 June 2008	2 hrs 10 mins	16 July 2008
H	13 June 2008	1 hr 50 mins	18 July 2008

The numbers of participants in each interview at each case study site are shown in Table 4.5. At four sites (B, C, D & G) several tutors and trainers, other than the lead tutor, attended the trainer meeting providing an opportunity to gain a wider perspective of the training environment. At sites E & H, only one trainer attended the meeting. No trainers attended the meeting at site A. No site visit was arranged at site F. This reduced the contact that the researcher had with people other than the lead tutor and the trainees at these sites. As a result, a wider perspective of training capacity issues was not obtained from four sites.

Table 4.5   Number of participants in case study interviews (in alphabetical order of site code)

Site code	Participants in interview with current cohort of trainees	Participants in interview with previous cohort of trainees	Participants in interview with tutors and trainers
A	1	1	3 (incl lead tutor and 2 trainees)
B	1	2	9 (incl lead tutor)
C	3	3	8 (incl lead tutor)
D	3	4	7
E	2	2	1
F	1 (by telephone)	0	No site visit
G	2	3	9 (incl lead tutor)
H	3	4	1
Total	16	19	38

Case study findings

The literature review had identified a number of possible conjectures (or emergent hypotheses) that may explain variation in training time between sites. Twelve emergent hypotheses (A-L) (Table 4.1) were identified from the literature and one emerged (Hi – performing appropriate roles) as the case studies were being conducted. The case study findings are presented in a question and answer format based on each of the emergent hypotheses and (with the exception of question one which does not relate to an emergent hypothesis) they use the same lettering, so Question A relates to emergent hypothesis A. Respondents are identified by type and by site, but not as individuals to retain anonymity. Respondents have been coded as lead tutors (t), current cohort of trainees (c), previous cohort of trainees (p) or other trainers (o) (all in lower case). Sites are coded from A – H (upper case). Therefore, a trainee from the current cohort in site D would be annotated as cD.

The case study findings are presented in Table 4.6 to Table 4.29. In each table the case study evidence is shown in order of the estimates of

preregistration pharmacist training workload from each site (lowest to highest). This is to help the reader to consider whether the case study evidence provides an explanation of the increasing workload estimates.

Question one.   Were the estimates of preregistration pharmacist training workload reliable?

The work described in Chapter 3 demonstrated that there was considerable variation in the estimates of training workload between sites. One explanation was that the self-reported estimates were not accurate. The estimates of workload needed to be verified to test this possibility.

The lead tutors were asked for their reaction to a comparison of their own estimate with that of other sites. Most respondents reconfirmed their previous estimates. Lead tutors at two sites (C & D) felt that their estimates were a little lower than the actual figure although they were unable to provide a new estimate. The estimates of training workload at each site and comments from lead tutors are shown in Table 4.6.

Table 4.6   Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments from tutors about the estimate of time in relation to other sites[47]

Site	Training workload	Comments about the estimates of time
A	3.1	*"My initial reaction was worry – were we doing something wrong . . .but I think it was a fair reflection of what we do really . . .but there is a concern – are we doing it right?" tA*
B	4.9	*"Yes – we're pretty hands-off – there are some weeks when we have very little contact at all with the preregs." tB*
D	5.2	*"To be honest, I thought it was going to be higher." tD*
H	6.7	*"It is reassuring to be somewhere in the middle. The problem with prereg is that it is so vague and open-ended . . .and you could very easily do too much or too little with them." tH*
C	6.9	*"It is actually very difficult to quantify the time . . . I would have thought that was a low figure." tC*
E	7.3	*"I would say that it is about average with other hospitals." tE*
G	7.6	*"It is probably fair – I think we give them a lot of time." tG*
F	14.9	*"Oh gosh, we do put a lot of time into our preregs, we do feel they take a lot of time. . . .so are we doing something wrong, are we spending too much time with them?" tF*

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[47] In order of estimates of training workload

Tutors who had provided estimates that were at the extremes expressed concerns that they were doing something different to that done at other sites, but stood by their original figures. Tutors who had provided estimates that were closer to the average were comforted to discover that they were in the "mid-range".

Question one.   **Were the estimates reliable?**
Answer: **Some evidence**

These data provide some supporting evidence to suggest that the estimates of training workload were valid. Whilst the estimates may not be absolutely accurate, they did indicate that there was variation in practice which was acknowledged by the tutors themselves.

Comparison of case study evidence with the emergent hypotheses

The case study evidence was compared with the emergent hypotheses identified in the literature to determine whether or not there was any evidence to support the theories about why training workload varied between sites. This process is described in the remainder of this chapter.

Question A. Could variations in training workload be explained by the extent to which sites took prior learning into account to avoid repetition of previously covered material? (Emergent hypothesis A)

Recognition of prior learning may help to eliminate wasteful repetition of training. (148, 149) Some preregistration trainee pharmacists may have experienced pharmacy practice prior to commencing their preregistration pharmacist training and so it was theorised that by taking this in to account training workload may be reduced. The estimates of training workload at each site are shown in Table 4.7 alongside comments from some tutors about how they managed trainees who had prior learning experience.

Tutors recognised that trainees progressed at different rates depending on their previous experience. Summer vacation experience or previous dispensing roles were considered particularly helpful in getting trainees up to speed faster. This reduced the need for time to be spent on induction training and basic orientation and procedures. However, no tutors reported specifically changing their training programmes to avoid repetition.

Table 4.7   Estimates   of   training   workload   (hrs/wk/trainee)   for preregistration pharmacist training and comments from tutors about the current use of prior learning[48]

Site	Training workload	Comments about current use of prior learning
A	3.1	*"I'm not sure if we actually say, right, you don't need to do a ,b or c because they have done it. We do consider what they have learnt as you go along." tA* *"You have seen them for two, perhaps three, summers – they hit the prereg year running." tA*
B	4.9	
D	5.2	*"In the dispensary - some trainees pick it up – if they have been in community and may jump ahead – it can be difficult if they are at different levels." tD*
H	6.7	
C	6.9	*"That's noticeable – the ones who have had exposure to the work environment before." tC*
E	7.3	*"A couple of years ago we had a graduate from x and one from y (university). The one from x had done lots of placements and I felt he settled in lots, lots quicker." tE*
G	7.6	
F	14.9	

Tutors were asked their opinions about increasing the use of prior learning if experiences could be provided within the MPharm programme. Respondents thought that activities that were covered at undergraduate level were not a real substitute for experience in the workplace. Where trainees had covered some areas of practice as undergraduates, they would have to demonstrate performance in the workplace, rather than relying on assessments that were undertaken in a simulated environment. Comments from tutors about potential future use of prior learning are shown in Table 4.8.

Question A   Use of prior learning? (Emergent hypothesis A)
Answer: Evidence lacking

This hypothesis alone does not explain the variations in time estimates between sites. Relevant previous experience was taken into account by the training sites in the study, but did not replace the need for delivery of training. It may have affected the rate at which individuals progressed after the initial training, for example at site A where the preregistration trainee pharmacist had

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[48] In order of estimates of training workload

undergone summer vacation training at the same site in previous years. Training that could be built in at undergraduate level at the university was not thought likely to be as valuable as practice-based experience. Training that could be delivered in the work-place during university education may be viewed as being more valuable. Therefore increasing the recognition of prior learning of preregistration trainee pharmacists may have some impact on training workload, depending on where the experience was gained.

Table 4.8   Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments from tutors about future use of prior learning[49]

Site	Training workload	Comments about future use of prior learning
A	3.1	*"If they had done it in Uni I would have concerns, but if you could prove it was on a placement . . in real situations I'd have no major problem with that."* tA
B	4.9	
D	5.2	
H	6.7	*"It would have to be something practical they had done."* tH *"Quite often they will say we've done this in college, but they haven't actually applied it."* tH
C	6.9	
E	7.3	*"At university they learn all the theory, but it is totally different when they come into practice. They are starting from scratch almost."* tE
G	7.6	
F	14.9	*"It's fine doing it in theory but doing it in practice is quite different."* tF

Question B.   Could variations in training workload be explained by the extent to which tutors and trainers supported trainees to take responsibility for their own learning? (Emergent hypothesis B)

Preregistration trainee pharmacists had spent four years as undergraduates before moving into their preregistration pharmacist training year where their role as a learner may have been quite different and unfamiliar. They were sometimes criticised by hospital pharmacy staff for requiring a large amount of direction. The estimates of training workload at each site are shown in Table 4.9 alongside comments from respondents about the role of trainees in their own learning.

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[49] In order of estimates of training workload

Table 4.9 **Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about trainees' roles in their learning**[50]

Site	Training workload	Comments about trainees' responsibility for their own learning
A	3.1	*"I don't think they are spoon fed at all." tA* *"I was quite happy to plan my own learning because at the end of the day it is something you need to be able to do." cA* *"The responsibility is totally with the prereg to organise your own programme. Spoon-feeding doesn't serve you well." pA*
B	4.9	*"The onus as a prereg is on you, it is much more hands off. It was nice - I got a bit more freedom and a bit more space, but it depends on your individual learning style." cB* *"At the end of the day, all you have to do is pass that exam and get someone to sign off your competencies. There is no pressure on you to perform." pB* *"All preregs get spoon fed - it is a really dossie year. No one expects anything from you." pB*
D	5.2	*"I sat in the library for most of the morning after my wards." pD* *"My prereg year was more like being an extended Summer student, shadowing, sitting in the library, reading something . . ." pD* *"Because the work is not there in the dispensary they just migrate to the library. I don't know how much of that is work and how much is conversation." oD.* *"We keep them apart because with three of them in the library, it ends up being a conversation." tD* *"You shouldn't have to hound them (the trainees) - they are going to be a qualified pharmacist. . . .I'm sorry but they have to take responsibility for what they are actually doing." oD*
H	6.7	*"I don't think I ever sat round thinking I haven't got something to do - there was always something that needed completing." pH* *"We went on the wards on our own - how could you possibly learn from that?" pH* *"The more you give them, the more they expect from you if you spoon feed them. You try to give them freedom - it's up to them, but they still are in student mode." oH* *"Preregs are spoon-fed. It is intended in a good way - they are guided and it is structured so well that sometimes they forget to think for themselves because they are waiting for the kind of next guidance from someone." pH* *"I gave them a bit of leeway for one tutorial and it all went wrong - they didn't follow simple instructions." oH* *"Because it is a prereg year, it implies they are there just to have the training and I think the exam makes it worse because they are still students." tH*

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[50] In order of estimates of training workload

Table 4.9 (cont'd)   Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about trainees' role in their learning[51]

Site	Training workload	Comments about trainees' responsibility for their own learning
C	6.9	*"We were not spoon fed here at all." cC* *"Compared with doctors we are completely spoon fed." cC* *"We see ourselves as students." cC* *"Some trainees need more guidance, although others are happy to be self-directed." tC*
E	7.3	*"I am always thinking of ways that they can teach themselves." tE* *"A lot expect things on a plate." tE* *"They are not actually allocated any free time." tE*
G	7.6	*"It is an attitude we as a department need to get over, they have come from Uni and they are at the bottom of the pile again. A lot do expect spoon-feeding. It sometimes frustrates me that we won't let them have a bit more initiative and do more things." tG* *"One of the big things is that they need to understand right from the beginning that they are responsible for their own learning." oG* *"I've learnt so much this year about the working world, how to learn and how to do things for yourself." cG* *"Now I look back and think there were so many other things I could have done in my spare time like read files and procedures, but at the start I don't think we had much guidance and what we were supposed to be doing and what the aim was." cG*
F	14.9	*"Everything is rota'd in. "I do try to make sure that they are busy, otherwise they will just hang around . . . I do monitor them quite closely." tF*

At three sites (A, B & C) some of the trainees' responses indicated that they had taken some responsibility for their own learning, but at most sites the tutors appeared to control the programme and monitor the trainees closely. This may be explained by reference to the work of Williams (152) who described two styles of tutoring: tutoring that provides supportive autonomy and tutoring that is controlling. For example, at site A it appeared that the tutoring model may have been supportive of trainee autonomy; the trainees were given freedom to take responsibility for their learning in an environment where support was available if needed. The trainees had accepted the responsibility and appeared to have thrived on the experience. There appears to have been conflicting expectations at site D. The tutors and trainers had expected the trainees to be self-directed and had given them freedom to

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[51] In order of estimates of training workload

undertake their own learning by allowing time in the programme for self-directed study. For some reason the trainees did not appear to have used their free time effectively and may have assumed controlled, rather than autonomous roles. It may have been because the expectations of the trainers were not explicit or were expressed in a harsh, critical style rather than in an encouraging and non-judgemental style, which is required in supportive autonomy. Alternatively, it may have been due to the individual characteristics and learning styles of the trainees. Some trainees may not be well equipped to take responsibility for their own learning and need more support than others. This appeared to be the case at site B where trainees from successive cohorts reacted to being given responsibility in very different ways. Sites that managed to create an environment where trainees were self–directed may have required less training workload than those sites that adopted a controlling style. However, trainees who were expected to be self-directed without adequate support may not have used as much training workload but their training experience may have been poor.

At three sites (E, F & H), the respondents expressed a desire for their trainees to be responsible, but appeared to be relatively controlling in their approach with the result that the trainees only had limited freedom to set their own direction. The trainees at these sites reported being fully occupied and not having any free time to plan for themselves. This was corroborated by the amount of training material that was provided by tutors at some sites. For example, it was apparent that some sites had highly structured programmes with learning objectives and specific activities that the trainees were expected to undertake, whilst at other sites trainees were largely expected to learn on the job. The estimates of training workload at each site are shown in Table 4.10 alongside comments from each site about training structure.

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Table 4.10 Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about training structure[52]

Site	Training workload	Comments about training structure
A	3.1	*"I think the model we use is more about doing the job." tA* *"It is quite unstructured – what you need you ask for, then you get it." pA* *"We don't do any tutorials at all." tA*
B	4.9	*"We really look for them to supervise themselves far more than I get the feeling from other sites." tB* *"We don't give them any tutorials . . it is much more practical." tB*
D	5.2	*"We tried to do clinical lectures and things and then the trainers said "we're only telling them stuff we are going to tell them at the wards" so we decided we won't do that." tD*
H	6.7	*"In each section we have workbooks set up and tests for each clinical section they go through." tH* *"Every month there is a section to be submitted. It gets them ready for the exam and helps the tutor to have a starting point for their regular discussions." oH* *"I do think they save us time . . in the tutorials we do try to get them to lead some of them themselves . . .they are gaining other skills as well as knowledge." oH*
C	6.9	*"We get them to complete a booklet, we keep it on-line, we have objectives for each section and which performance standards we expect them to cover within that section." tC* *"Certain sections had laid out paperwork to go through like a workbook. I think that was really useful because you were focussed on your own learning outcomes." pC* *"The practical training we got in tutorials was very useful." pC* *"It is easy to get them together in a group, rather than repeat yourself x times." pC*
E	7.3	*"Most of the sections have objectives." tE* *"I've made them look at OTC subjects and do mini presentations every week." tE*
G	7.6	*"We have got set objectives for the clinical rotations." tG* *"I would have liked more time in tutorials. It would have been nice to have a lecture on a few things like respiratory." pG* *"We don't officially do tutorials – there are one or two that we do." tG* *"Some people have regular tutorials – at the time you are jealous, but in the end you benefitted because you learnt from the prereg year that you had to go out and look for the information yourself." pG*
F	14.9	*"I write the overall programme." tF* *"We do maybe four or five tutorials a year – not many at all." tF* *"They have a manual they have to work through within aseptics, to be signed off at the end, so it is fairly structured within each section." tF*

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[52] In order of estimates of training workload

The comments about the degree of structure and planning involved in training were reflected in the analysis of documentary evidence of training programmes that were submitted by each site. The estimates of training workload at each site were compared against a description of the training programmes from each site as shown in Table 4.11. There appeared to be a relationship between the degree of organisation and structure in place at each site and the amount of time that the tutors spent on training. Generally, at sites with lower estimates of training workload, the tutors did less preparation, planning and didactic teaching than tutors at sites with higher estimates of workload. Clearly, sufficiently detailed planning and organisation was required to ensure that trainees covered relevant areas and progressed through the programme. Indeed, tutors from some of the larger sites reported that in some situations detailed planning and organisation helped them to manage capacity because it avoided problems with duplication and repetition. For example, some workshops were run for all trainees as a group rather than as one-to-one tutorials. This prevented them from having to repeat the same basic information for each trainee and was thought to save time. However, highly organised programmes may have had the disadvantage of being less flexible. Smaller sites may have benefitted from being able to deliver training as the need and opportunities arose, without having to spend time putting detailed plans in place.

Question B. Role of trainees in their own learning (Emergent hypothesis B)
Answer: Some evidence

The hypothesis may partly explain the variation between sites. The responses indicated that at sites where trainees were expected to organise their own learning (Sites A, B, D and to an extent, E), less time was spent on training than in sites where the tutor was largely responsible for organising the learning (Sites C, F, G & H). However a degree of structure was helpful in managing workload, particularly where training was being delivered to several trainees. It was noted that workbooks and activities were being developed at several sites independently of what was happening elsewhere, which will be discussed with emergent hypothesis K.

Table 4.11 Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and description of documentary evidence received[53]

Site	Training workload	Documentary evidence of training programmes received
A	3.1	*One side of A4 – showed location of trainee and duration (e.g. MI 2 weeks – no exact date specified).*
B	4.9	*Two sides of A4. 1st page detailed the location of all trainees week by week. 2nd page gave detailed induction plan and timetable for weeks 2 – 6, and dispensary timetable with targets for completion of ACT.*
D	5.2	*2 page document for each trainee, outlining location, week by week, trainer(s) and dispensary tasks.*
H	6.7	*A section of a booklet for ward based teaching (cardiology – 9 pgs), a section of a workbook for preregs – on Aseptic services – (21 pages), one sheet detailing the tutorial programme (one per month), documentation to aid with evidence collection and appraisal.*
C	6.9	*One A4 sheet giving location of all trainees for year (month by month), plus a 90 page workbook for trainees to refer to as they moved around the various sections.*
E	7.3	*One side of A4 giving week by week breakdown of location of trainee (am and pm), dispensary activities e.g. Team A/ACT, regular duties, dates of appraisals & timing of weekly tutorials.*
G	7.6	*A five page section of a larger booklet – the section submitted was used for clinical training of preregs. Contained week by week breakdown of objectives, activities that would be undertaken, evidence that was expected to be collected and a column for assessment to be signed and dated once completed.*
F	14.9	*A 3 page document detailing the location/activity of the trainee each week, the trainer(s) involved and any further information, including dates of tutorials that were planned (4 in total).*

Question C. Could variations in training workload be explained by the extent to which trainees had access to a supervisor for sufficient time that they were in a position to delegate appropriate responsibility? (Emergent hypothesis C)

The ratio of pharmacists to preregistration trainee pharmacists met RPSGB standards (142) at all sites as shown in Table 4.2. However, there was marked variation in the ratio of trainees to approved tutors/managers. The highest ratio was three trainees to one tutor/manager at site D. In contrast, at site H, the ratio was 3 trainees to 9 approved tutors/managers. At five sites (A, B, E, G & H), each trainee had a dedicated tutor. At three sites (C, D & F), one tutor was responsible for two or three trainees. At three sites (A, C & H),

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[53] In order of estimates of training workload

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a preregistration pharmacist manager took overall responsibility for the programme and managed the tutor(s), but did not tutor a trainee themselves. The ratios of trainees to tutors did not provide any information about the quality of the training, or the tutoring workload at each site. The case studies were used to understand the nature of the supervisory relationship. The estimates of training workload at each site are shown in Table 4.12 alongside comments from each site about continuity of supervision. At sites A & H the approved tutor had a one-to-one, apprenticeship-style, relationship with their trainee. This may have provided a degree of continuity for the trainee to develop confidence and receive more delegated responsibility. (155) At sites D & F only one person was formally involved in preregistration pharmacist training. These individuals had the dual roles of manager and tutor, and both tutors were responsible for more than one trainee.

At sites D & G problems with continuity were reported when trainers, rather than tutors, supervised the trainee during clinical rotations and provided indirect feedback shown in Table 4.12. Similarly, at site F the tutor mentioned they spent time reading evidence because they had not observed the trainee themselves, which presumably would have added to their workload. Tutors who had to rely on indirect evidence rather than direct observation may have spent more time preparing for appraisals, and their feedback may not have been as credible as if they had been witness to the performance themselves.

Sites A & H were the only sites that appeared to use an apprenticeship-style relationship. Although this may have created a lot of work for one person, it may have saved time in avoiding numerous handovers to successive trainers. The quality of the supervisory relationship (155) was likely to have been high and this could mean that the trainee developed to a point of competence more quickly. Respondents at sites C & G were in favour of the adoption of an apprenticeship-style model, although it was not the model that was in place at the time of the study.

Question C   Ratio of trainees to trainers (Emergent hypothesis C)
Answer   Some evidence

The hypothesis may explain some of the variation between sites. It appeared that sites that ensured that the trainees spent time with one person (ideally

their tutor) in an apprenticeship-style relationship may have required less training workload than sites that did not.

Table 4.12   Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about continuity of supervision[54]

Site	Training workload	Comments about continuity of supervision
A	3.1	*"It was important to spend a lot of time with my tutor at the start to get confident, to get all my queries out of the way." cA*
B	4.9	*"I am not there (the dispensary), I listen to the senior tech and it just so happens that I trust her judgement." tB*
D	5.2	*"There was no handover meeting. It would be useful." pD* *"I'm not sure that there is any progression between rotations – I don't know if we do that. At the end of the year they will have done everything, but not necessarily with any progression." tD* *"There is no handover between trainers – you just assume where they are in the year." oD*
H	6.7	*"One of the main advantages is that it (tutoring) rotates every year – it means that if a pharmacist (e.g. the MI pharmacist) has tutored, she will know the ins and outs of prereg training and therefore the quality of the training will be much more appropriate for the prereg level." tH*
C	6.9	*"I think we need to adopt an apprenticeship approach - learning on the job - core skills - having that kind of personal tutor approach means that you don't hold a whole group to the same level of progress - it will vary in their qualification to take on different aspects - rather than going the rate of the slowest." oC*
E	7.3	
G	7.6	*"In an apprenticeship model, although it is a heavy workload, it works well for the student – you can build up a rapport with someone, in contrast with shadowing lots of people who you learn from. You can give them the encouragement - you can see how they're getting on." oG* *"I have had a problem in the last four weeks – I was not familiar with them, and yet I have had to sign them off and say they were competent." oG* *"I feel like it would have been a lot more useful if my tutor had seen what I was doing a lot more. Because they are my actual tutor. I know it is difficult because they have other roles in the dept." cG* *"If you're talking about clinical checking for example, they may have checked 50 items - but there will have been issues in those 50. Something that hasn't been picked up - a mistake if you like. So when do you say "Right it's OK for that person now to do it on their own?" Who takes responsibility for it?" oG*
F	14.9	*"When I do their appraisals I like to read their evidence to see where they are at." tF*

[54] In order of estimates of training workload

Question D. Could variations in training time be explained by the extent to which sites exposed trainees to a number of different role models rather than rely on a limited number of specialist tutors? (Emergent hypothesis D)

Whilst having an apprentice-style relationship may have been important for effective feedback and progression, trainees may also have benefitted from working alongside a variety of different pharmacists. Trainees identify types of behaviour by observation of role models and use that to mould their own practices. In this sample, all trainees were exposed to the practices of different pharmacists to some extent. All respondents considered that having exposure to several role models was beneficial. The estimates of training workload at each site are shown in Table 4.13 alongside comments from respondents about role models.

Table 4.13   Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about role models[55]

Site	Training workload	Comments about being exposed to a number of role models
A	3.1	*"I think people want to make sure they act as professionals as they are seen as role models." tA*
B	4.9	*"I enjoy using the 3 or 4 pharmacists I do for the clinical because I know that they will be explaining things and they are approachable people so most preregs won't feel that they can't ask a stupid question." tB*
D	5.2	*"It is good to rotate around many pharmacists – you learn different styles, and also, one person may not have enough time for you." pD*
H	6.7	
C	6.9	
E	7.3	
G	7.6	*"It's good to see different points of view - and seeing how 3 different pharmacists concentrate on slightly different things, it's kind of working out your own system." cG*
F	14.9	

Question D   Access to different role models (Emergent hypothesis D)
Answer: Evidence lacking

This hypothesis does not sufficiently explain the variations in time estimates between sites. The hospital pharmacy environment provides trainees with opportunities to discuss and observe practice with a range of role models. As

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[55] In order of estimates of training workload

this was true of all the hospitals in the study it did not provide an explanation for the variations in training workload.

Question E. Could variations in training workload be explained by the extent to which sites ensured that trainers understood their role and had knowledge of how their training contributed to the overall objectives of the trainee (Emergent hypothesis E)

The estimates of training workload at each site are shown in Table 4.14 alongside comments from each site about communication with trainers.

Table 4.14   Estimates   of   training   workload   (hrs/wk/trainee)   for preregistration   pharmacist   training   and   comments   about   wider communication about the role of trainers[56]

Site	Training workload	Comments about wider communication about the roles of trainers
A	3.1	"I think everybody understands the prereg is an important member of our department." tA
B	4.9	
D	5.2	
H	6.7	"We try to develop a culture where it is everybody's job to do the training, not just specialised posts." tH
C	6.9	"When I was a prereg - preregs were incorporated into everything - you were training constantly - whoever was there was sort of asking - Do you know about that?" pC "It is about trying to create a culture that accepts that we do have to train and it is everybody's responsibility." tC "I think there is a good learning environment." tC
E	7.3	"One of the main things is getting enough people training them. I'm getting some help now and that's made it easier." tE
G	7.6	"That is quite hard for someone who's not involved in any of it - I think that's quite hard. If I'm in the dispensary for an hour slot, and I see a prereg sitting next to me, I cringe because I don't know what I'm expected to do. I do find that hard." oG "When I was a prereg, the pharmacist would question you on out-patient prescriptions. Now, no one does that." pG. "I think it is a culture thing. Training is seen to be done by the people who are assigned to do it and not by everyone else." oG
F	14.9	"They (the pharmacists) are all involved (in training)." tF

The extent to which people outside the immediate training team were aware of the needs of the preregistration trainee pharmacists appeared to differ. At some sites where preregistration pharmacist training was usually performed

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[56] In order of estimates of training workload

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by a defined group of staff, the rest of the department sometimes appeared detached from the training process. At site G, one trainer reported that they did not know how to support trainees and as a result was reluctant to become involved with trainees in their work environment, which potentially led to lost learning opportunities.

Table 4.14 illustrates that most tutors had a view that training was a role that everyone should undertake however, some trainers suggested that it was difficult to contribute to a process that they did not fully understand.

The number of trainers who were not approved tutors appeared to vary considerably between sites. The site visits provided an opportunity to get a simplistic impression of the wider involvement of staff in training, not least through observation of the numbers of attendees at the group interviews with trainers as shown in Table 4.6. At three sites (A, E & H), no staff other than the approved tutors attended the meeting. In contrast, at four of the sites (B, C, D & F) several trainers attended the meeting. There were potentially numerous reasons for non-attendance, which are not explored here, but this did highlight the possibility that some sites achieved wider involvement of other staff in the process than others.

Tutors used a variety of mechanisms for communicating with trainers, including meetings dedicated to training issues, as an agenda item on other in-house meetings, or as a one-to-one discussion with individual trainers as shown in Table 4.15.

Several trainers described how valuable they had found discussing preregistration pharmacist training with their trainer colleagues from other sections during the site visit for the present study. It became apparent that usually, communication about preregistration pharmacist training came directly from the tutors as a presentation of information, or during a one-to-one discussion with one trainer and the tutor. These were valuable processes, but notably it meant that there were relatively few opportunities for the trainers to discuss training with each other.

Table 4.15 Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about communication with and between trainers[57]

Site	Training workload	Comments about communication with and between trainers
A	3.1	"We have a pharmacist meetings once a week . . .preregs very often is an item on the agenda." tA "There isn't a formal mechanism for training the trainers." tA
B	4.9	
D	5.2	"It would be a good idea to have a meeting like this at the beginning of each year. We don't really do that." oD "I never really thought of offering any training to them (the trainers)." tD
H	6.7	"I have got a meeting with them (the other tutors) next month to go through what my expectations are of them. We have got a lot of things set up for them, in terms of a diary for the year." tH
C	6.9	"From my point of view (clinical) I just want to know what needs to be delivered." oC "We tend to have an annual meeting of key trainers in an area, rather than all trainers involved because of the size of it." tC
E	7.3	"We have pharmacists meetings weekly and if there is anything pertinent I hold the tutors back after the meeting." tE
G	7.6	"I have a meeting with them all, I will this year, so I can go through the standards and what is expected." tG
F	14.9	"We have a meeting where we discuss the programme." tF

One of the most revealing questions in the group interview with trainers was "What is the aim of preregistration pharmacist training in this department?" Whilst all participants had a view, it was clear that most trainers and tutors had not discussed this with their colleagues to check if their opinions were aligned. The estimates of training workload at each site are shown in Table 4.16 alongside comments from each site about the purpose of preregistration pharmacist training.

Several trainers mentioned that one of the objectives of the training was to enable the trainee to pass the registration examination. The registration examination aims to assess knowledge and understanding required for effective professional practice (135) but comments from some tutors and trainers (Sites C, F & H) implied that there was a difference between that and

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becoming a competent pharmacist. The purpose of preregistration pharmacist training had become a topic of discussion for the wider profession at this time as the competencies required of a "day one pharmacist" had been consulted upon during the drafting of the pharmacy practice framework. (187)

Table 4.16   Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about the purpose of preregistration pharmacist training[58]

Site	Training workload	Comments about the purpose of preregistration pharmacist training
A	3.1	
B	4.9	"I usually ask them (the trainers) to do less in a section." tB "The aim of the RPSGB and ours are different. We are trying to create a good pharmacist." oB
D	5.2	"I train them to be a pharmacist - there are no strict protocols. I don't use the RPSGB objectives - I leave that to the tutor. I have a list for my section - I use the same as for the diploma, but I don't expect as much." oD
H	6.7	"We are training them to be a competent hospital pharmacist - not necessarily things that are in the exam - we need to remind the trainees of that regularly." oH "We are following UKMI guidance." oH
C	6.9	"I don't even know if we are here to get them through the exam or to get them to be a hospital pharmacist - logically that's what we should be doing." oC "Some of the things we do here don't tick boxes in terms of performance standards but they are contributing to their hospital pharmacy career." oC "It (the philosophy) is not particularly clear locally. Over the years we have given them more and more." oC
E	7.3	
G	7.6	We are training them to be a hospital pharmacist - not to the RPSGB standard - I personally don't know what they are." oG "Occasionally the standard on ward is higher than they are expected to need. It is hard to differentiate what's needed at what level. Sometimes we go into it in too much detail." oG "The kind of level they (the trainers) are expecting from the prereg is a lot higher than I would expect as a prereg tutor." tG "We are trying to create a pharmacist who can go out there, not know everything, but can know where to look or who to ask." oG "We are unable to give them what the UKMI expects." oG
F	14.9	"The individual tutors organise their main objectives for the individual prereg, so I don't get involved in that." tF "We want the prereg to gain as much as possible to get them through their exam." tF

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Some of the trainers who were in charge of training within their own sections did not appear to know how their contribution to preregistration pharmacist training dovetailed with the rest of the programme. Several of them used section-specific training materials that tended to have limited or no input from preregistration pharmacist tutors. There was no apparent mechanism for cross-checking for duplication or omissions between the training delivered in each section. It was recognised that modifications and additions to section programmes over time had led to some elements of the training programme becoming increasingly complex and over-crowded. There was no mechanism for periodic review to ensure that the objectives and delivery of preregistration pharmacist training was still fit for purpose and complemented training that took place in other areas.

Question E. Communication with and between trainers (Emergent hypothesis E)
Answer: Some evidence

The hypothesis may explain some of the variation between sites. Several trainers used training materials for their sections which had been developed in isolation of the other people at their site. None of the case study evidence demonstrated that there was a mechanism for ensuring that the trainers involved in training preregistration trainee pharmacists were given a clear overview of the training programme and where their contribution fitted in.

Question F.   Could variations in training time be explained by the extent to which sites lengthened the duration of rotations rather than providing a series of short duration rotations? (Emergent hypothesis F)

Preregistration pharmacist training programmes were designed to ensure that as well as covering the RPSGB performance standards and the examination syllabus, trainees got an interesting and varied experience by rotating through all the available areas of hospital pharmacy. However, it had been identified that programmes that consisted of short periods of time in each practice experience had the disadvantage a disproportionate amount of time was spent training rather than practising relevant skills. (115, 146, 165, 177) The case study evidence highlighted that this was particularly true for some specialist sections of the pharmacy, such as medicines information, quality assurance and aseptic manufacturing, as can be seen in Table 4.17.

Table 4.17   Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about rotations into sections of the pharmacy

Site	Training workload	Comments about rotations Into sections of the pharmacy
A	3.1	*"In aseptics they don't undertake any manipulation – just observation. They might have a go at doing some broth tests." tA* *"They used to come back and say "Why did you send me there (QC) - it was a waste of time." tA*
B	4.9	*"They spend 5 weeks in SPU followed by 2 weeks in quality control . . . when they get there they can't do all that much . . . we get more and more who don't want to go in there at all." tB*
D	5.2	*"I enjoyed the placements but core skills are important as well." cD*
H	6.7	*"In production, rather than an 8 week block, we will do broth runs and an introduction in a couple of weeks and then one of the preregs will have a slot per week to do production. The prereg maintains their skills throughout the year. If production is short on a given day there is a choice of people to cover as well." tH*
C	6.9	*"From an MI point of view, they come for long enough to get a reasonable experience and hopefully, depending on the individual, they get to the point of being a useful member of staff." oC* *"There is too much focus on MI. No one wants to work there. It is a good way to put preregs and diploma pharmacists off MI. You want to be useful, but you are just sat at a desk – you are just paper pushing really." pC* *"We don't need to put preregs through technical services to cover the performance standards . . . but the manager sees it as a way of recruiting or raising the profile of technical services." tC* *"I think it is good to see those things (SPS, MI and clinical specialities), but I think it is a luxury to spend as much time as we did in prereg. I think a shorter amount of time is OK. Focus on getting the core skills." pC*
E	7.3	*"In aseptics, they observe and they hate it because they don't do much – they could watch it on a video, couldn't they?" tE*
G	7.6	*"They don't become useful in MI – they are only there for a week after the workshop – they can do a couple of queries – it all needs checking." oG* *"I had 2 weeks in aseptics – I did broth runs, but not much else." pG* *"They are not in anywhere particularly long enough, apart from the dispensary, to really put in a major input." tG*
F	14.9	*"The aseptics unit was small – I learned how to gown up. There was not much more I could have done really." cF* *"I think the manager's view was that it was a recruiting ground for QC pharmacists – although he never had any from us – I know that." tF*

Often in these specialist sections, specific standards were in place to ensure that appropriate training was undertaken prior to working in the area(s). Because the preregistration trainee pharmacists were usually only in these sections for short periods, most were not able to reach a point where they could undertake real work. The result was that a disproportionate amount of time was devoted to training rather than gaining experience of working in the area. Site H was unique in using an approach where the trainees in technical services completed the standard training programme for staff working in the area and, in order that the investment in training time was not lost, they worked in the department periodically throughout the year. This meant that the trainees developed skills and confidence in a highly specialist area and contributed useful work to the section. With the exception of site H, the training time spent in specialist areas was criticised for being wasted time. As this was a widespread criticism it did not provide an explanation for the variations in training workload.

Unlike the rotations though the specialist sections of the pharmacy, there were contrasting approaches to clinical rotations possibly providing some explanation for the differences in training workload. At some sites (F & E), the preregistration trainee pharmacist spent time on almost every ward in the hospital. The stated aim was to expose the trainee to a wide range of clinical specialities. However, at sites B & H, the number of wards trainees worked on had been reduced specifically to ensure that the trainees could consolidate their learning. At site B, where four week rotations were the norm, the trainees felt that even longer rotations would have been beneficial. This supported the findings by Beck and Kassam, (146, 165) who recommended that placements should be longer than 4 – 6 weeks. Sites A & D had given the trainees a regular ward to cover for the whole year. Several trainers expressed their dilemma between enabling trainees to see every speciality or spending more time becoming competent and confident in basic clinical skills. Despite appreciating variety, trainees wanted longer rotations in clinical areas to help build confidence in their own abilities. This effect was noted in work by Noble and Hassell (137) who found that rotational work could cause trainees to feel overwhelmed by learning. The estimates of training workload at each site are shown in Table 4.18 alongside comments from respondents about the duration of clinical rotations.

Table 4.18 Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about the duration of clinical rotations[59]

Site	Training workload	Comments about duration of clinical rotations
A	3.1	*"There is something about starting earlier and getting involved earlier, and by the end of the year they will have done a fair bit of clinical pharmacy." tA*
B	4.9	*"The rotations were only 4 weeks. You don't get the chance to know the ward as well. It would probably be better to have longer rotations. It would give you chance to get used to the ward as well." pB*
D	5.2	*"They have one ward to themselves for the year . . . what they are doing initially is the technician role." tD*
H	6.7	*"We used to do a little bit of everything – we have pared that back . . . so what we want out from the clinical is their approach and to look at how the pharmacists are working." tH* *"You want them to stay and therefore you need to give them a taster." tH* *"You go with one pharmacist a week here to get to see everything - but having a pharmacist for longer might get to know you and give you more responsibility." cH*
C	6.9	*"I would be disappointed to not experience the breadth" Pc* *"Whilst it is broader and not everyone gets to do it, I feel that I am better off at this point." cC*
E	7.3	*"This year we tried having the trainee on the ward for two or three weeks, rather than a ward every week." tE*
G	7.6	*"Variety is what attracts them to hospital. It could just be a visit – just one day. You don't have to send them out for long – bring it back and concentrate on your core things." oG* *"Maybe two wards since February would have been good. It's one thing saying I'd like to have experienced lots of different things, but there just wasn't enough time. I don't feel that confident. Whether it would be a good idea just to stick to two wards and get to that point where you're confident." cG* *"There can be too much variety – there is only so much you can take in and if you're not actually doing it yourself, you don't retain as much." pG*
F	14.9	*"They will be attached to a pharmacist for a week or a fortnight in a certain speciality so by the end they have almost covered every ward within the hospital." tF*

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Question F.   Duration of ward-based training rotations (Emergent hypothesis F)
Answer: Some evidence

The hypothesis may explain some of the variation between sites. Where trainees spent four weeks or more on each ward (sites A, B & D) less training workload was needed. This may be because less time would be required to orientate the trainees to the types of patient, members of staff and clinical problems in each new ward environment. At sites where the clinical rotations were all of short duration, the trainee may not have had the opportunity to consolidate what they had learnt.

Question G.   Could variations in training time be explained by the extent to which sites delivered training that was focussed on development of core skills rather than delivering specialist knowledge? (Emergent hypothesis G)

A number of tutors and trainees mentioned that the complexity of the patients' conditions meant that the trainees sometimes found it difficult to apply their knowledge. This was supported by Raehl and Bond's (143) view that the focus of pharmacy education should be on core skills, rather than on the acquisition of specialist knowledge or experience.   Several respondents suggested that it was better for preregistration trainee pharmacists to work in general medical and surgical areas where the clinical conditions were not as complex. The estimates of training workload at each site are shown in Table 4.19 alongside comments from each site about the complexity of clinical rotations.

A number of sites (A, B, D & H) had taken an approach where trainees were being trained in the core skills and there was a recognition that specialist training should be left until after registration as a pharmacist.

Question G.   Degree of specialisation (Emergent hypothesis G)
Answer: Some evidence

This hypothesis may have provided some explanation for the variations in training workload estimates between sites. Sites that reported to be focussing training on core skills, rather than specialist knowledge appeared to require less training workload than sites that exposed their trainees to all the clinical specialities

Table 4.19   Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about the complexity of clinical rotations[60]

Site	Training workload	Comments about complexity of clinical rotations
A	3.1	"You don't need to be exposed to all the specialisms - you're trying to achieve a professional at the end of the day - not a clinical specialist." tA
B	4.9	"It doesn't matter what speciality you work in – it doesn't matter. As long as you can competently look through notes, fill in the care plan, think about everything, speak to the patient and feedback to the pharmacist. And to be honest, it would take stuff off their hands if they delegated right." pB
"They can learn the clinical things as they go on and find where the gaps in their knowledge are - that's what CPD is for." oB
D	5.2	"Good rotations are general medicine and general surgery because the doctors who prescribe on those wards are not so experienced either, so you can really learn to contribute. One girl did ITU as one of her first rotations and didn't get much out of it at all." oD
H	6.7	"I am trying to make sure that they can effectively check on the wards, rather than know all the ins and outs of the evidence base." tH
C	6.9	"It's knowing what the basic requirements are and then what is the added value." tC
"I still think there is a danger we are trying to produce diploma pharmacists and not trying to produce preregs." tC
E	7.3	
G	7.6	"The preregs are a lot more at ease on the surgical side than they are on a medical ward . . .I have noticed that they are a lot more confident." tG
"It is something that is worrying me about our prereg training that actually we're missing the basics . . .we're finding at quite a late stage that they don't know things that we would expect them to be learning." oG
F	14.9	

Question H. Could variations in training workload be explained by the extent to which sites ensured that trainees made an appropriate contribution to the work of the service? (Emergent hypothesis H)

It had been suggested that trainees who were involved in service delivery learnt more efficiently and required less training workload than those who were completely supernumerary. (108) The extent to which preregistration trainee pharmacists performed work that contributed to service delivery varied considerably. Some respondents mentioned that the trainees were useful (A,

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D & H) – which was better for their self-esteem and confidence as well as for the contributions that they made to the workload. However at sites C & E, the trainers and tutors described how the trainees at their sites did not contribute greatly to service delivery and were perceived as a drain on the department. The estimates of training workload at each site were considered alongside comments from each site about contribution to service delivery and are shown in Table 4.20.

Table 4.20 Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about contribution to service delivery[61]

Site	Training workload	Comments about contribution to service delivery
A	3.1	"I think we do our utmost to get them up to speed . . . .they most probably value the fact that they are valued by us." tA
B	4.9	
D	5.2	"They are a big help on the wards – but from their point of view it is a lot of work." pD
H	6.7	"We were not a burden in aseptics – they were using you to make things." pH "Because it is a prereg year it implies they are there just to have the training. They have got high expectations and yes they do put something in, but I think the department puts more into them than you get back." tH
C	6.9	"It is a huge investment with what appears to be very little return." tC "We were considered a waste of space, mainly by the techs" cC "We have band 2 ATOs that we take in off the street, within 6 months we expect them to label and dispense, they are taught to self-check. Maybe the first quarter is consolidation and making them feel comfortable – but for God's sake – three months is a long time to do that." oC "At first we did dogsbody jobs . . . maybe if something was done so that you were useful on Day One." pC "The preregs get a very good deal – the diplomas are rota'd up to the hilt and the student techs aren't allowed time to put their portfolios together." tC
E	7.3	"We were a burden in the first few weeks when you had to be double checked, once you could dispense you were useful." cE If they got the ACT quicker . . .we could do professional checking sooner, so they can do more at ward level." tE
G	7.6	"Having some small area of responsibility is good for them to make them feel like part of the department and not a drain on people's time." oG "We didn't really have a purpose." cG "Once they have done ACT you can see they feel useful." oG
F	14.9	

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It was interesting to consider whether the trainees were working in the non-employee or the employee model used by Slack and Draugalis. (108) There were variations between rotations and between sites in the amount that these models applied. In clinical rotations and the dispensary, the trainees undertook some work that contributed to service delivery. If the trainees were not there at those times, then the work would have to be undertaken by other members of staff, indicating that they were in the employee model. When completely untrained, they would have a large negative impact on output, but conversely, when trained, they would have a large positive effect. In contrast, in some specialist rotations, preregistration trainee pharmacists fitted into the non-employee model (that is, not providing any contribution to service delivery, the trainee's absence results in no, or a positive impact).

Question H. **Trainees' contribution to the work of the service (Emergent hypothesis H)**
Answer: **Some evidence**

The hypothesis may explain some of the variation between sites. Sites where trainees were able to spend larger proportions of their time working in the employee model used less training workload.

In the course of discussions about contribution to service delivery, it became apparent that some trainees were working as pharmacy technicians during their training year, whilst at other sites the trainees were taking on the pharmacists work. This was explored further to discover whether this may explain variations in training workload and led to emergent hypothesis Hi.

Question Hi. Could variations in training workload be explained by the extent to which sites ensured that trainees performed appropriate roles (under supervision) during their training (Emergent hypothesis Hi)

At some sites trainees complained that they had spent a lot of time being trained to do tasks that they did not foresee being relevant to their future role as a pharmacist. In particular, several trainees had spent a proportion of their time being trained to undertake the role of pharmacy technicians. This had caused boredom and a lack of motivation because the trainees did not feel their time was being spent well. This problem was also recognised by tutors and trainers who had noted that trainees needed to develop the thinking skills of pharmacists, not technicians. The estimates of training workload at each

site are shown in Table 4.21 alongside comments from respondents about the role of the trainee.

Table 4.21   Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about the role performed by the trainee[62]

Site	Training workload	Comments about the role performed by the trainee
A	3.1	*"The last thing you want is having people in positions where they are not having the training and they are being used as an extra pair of hands." tA* *"They are not part of any rota whatsoever. Sometimes the guy in charge of the support staff annual leave says "Oh look we are desperately short on Friday afternoon – Can we have the prereg in the dispensary?" No – basically – don't ask the question, you know you are not allowed to ask the question." tA*
B	4.9	*"With the technicians we are very black and white . . .I don't want our preregs going down the same line because we want them to have professional judgement." tB*
D	5.2	*"They are not being supervised all of the time, but what they are doing is the technicians' role." tD*
H	6.7	*"People check differently – when you're doing your ACT figures you like to be conscious of who is checking afterwards. You think like a technician." pH* *"We did trial meds management training with them, but we didn't find it worked." tH*
C	6.9	*"You do try and think what the drug is etc, and you do, but not very often, because you are just in a zone when you are dispensing, without any kind of brain stimulation, or any motivation. It was only when I went up on the wards that what went on in the dispensary made any sense to me. I was just a technician. It is difficult to say to someone think as a pharmacist when really you are just doing technical work." cG*
E	7.3	*"We've trained them up so they can do the role of a medicines management technician." tE*
G	7.6	*"We were doing the technician's medicine management role with them but that wasn't appropriate because by doing that they were thinking like technicians, not pharmacists." tG* *"It is difficult for the staff in there to accept that after a reduced amount of time compared to the technicians they are up to it, and yet they have got a university degree and done vacation placements." tG* *"A lot of the ACT rules are so particular and really specific. When we're qualified as a pharmacist it is different. As long as the patient is not going to come to any harm from reading that label that's OK. But if that label didn't have a specific word on it, and an ACT checked it, they would pick you up on it." cG*
F	14.9	*"We don't put them through ACT at the beginning of the year – I have always felt that is not fair on the prereg – it's a bit soon." tF*

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It had been suggested that trainees who take on roles performed by non-registered staff may lead to them feeling stigmatised and unprepared for their future role. (188) This may have some relevance to preregistration trainee pharmacists who need to assume the status of a pharmacist. This may be impeded if they are performing roles of junior staff. The approaches that sites had taken were noted to vary considerably. Some sites clearly used the trainees in the role of technicians for parts of their training (sites D, H, C, E & G). Sites A & B had avoided that approach, preferring the trainees to work as pharmacists under supervision. Surprisingly, site F had avoided the trainee taking on a technician role until late in the year because it was perceived as being too soon. Given that the trainees were about to register as a pharmacist, this may have been rather over-protective. Some trainers commented on the impact that the introduction of automation had had on training. When dispensaries become automated, there are some changes to the flow of work through the department and people's roles tend to change to streamline processes. Some preregistration trainee pharmacists had found it difficult to fit in to the work stream especially if they need to spend time considering a particular prescription or to identify and discuss problems with a pharmacist. Access to the dispensing computers was also problematic at some sites.

Question Hi. Appropriate roles (Emergent hypothesis Hi)
Answer: Some evidence

The hypothesis may explain some of the variation between sites. Trainees should be trained in appropriate roles to develop skills required for their future practice. Training in roles that they are unlikely to perform once they are qualified took a disproportionate amount of time and led to problems with motivation and delayed progression to other training.

Question I.   Could variations in training workload between sites be explained by the extent to which sites delegated appropriate levels of professional responsibility to trainees? (Emergent hypothesis I)

Evidence from the literature (152, 160, 172, 173) demonstrated that having responsibility for something aided learning. However, comments from a number of respondents, including many trainees, indicated that, with the exception of site A, preregistration trainee pharmacists were not given much

responsibility. The estimates of training workload at each site are shown in Table 4.22 alongside comments from each site about responsibility for patient care.

Table 4.22   Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about responsibility for patient care[63]

Site	Training workload	Comments about responsibility for patient care
A	3.1	*"They become the pharmacist for the ward, obviously supervised. How quickly you let the reins go will depend on the individual." tA* *"We do the utmost to get them working independently as soon as possible." tA*
B	4.9	*"You don't have much responsibility. We were quite protected and that's because the RPSGB says we're not registered." cB*
D	5.2	*"It is a nice year to have – there is not much responsibility." pD*
H	6.7	*"The doctors are dropped in at the deep end whereas we were wrapped in cotton wool." pH* *"In general, if preregs have an opportunity, they would like to take on more responsibility . . . it is just knowing your limitations at this stage." cH* *"It would have been beneficial to have more responsibility, although I may not have wanted it at the time." pH*
C	6.9	*"I think sometimes we labour the point and we don't sign preregs off early enough." tC* *"If someone asks us something, we say "we're a prereg" – we go and ask someone else." cC*
E	7.3	*"The let down really was that as a prereg we weren't allowed to do very much. At the beginning we were put into cotton wool and in fact we weren't allowed to do anything." cE* *"With us, we didn't have any responsibility." pE* *"One day we found an error – and later were asked why didn't we tell the doctor? We weren't really aware what we were allowed to do." pE*
G	7.6	*"If you cushion them too much they are not going to think for themselves." oG* *"I remember coming back from community feeling quite responsible, but then I came back here and went back down again." cG* *"I wish we had more responsibility. I know that when you start you are at the bottom of the barrel and everyone has to get themselves to the top but my confidence just sank when I came because I felt that I had no knowledge . . . and I didn't think that my skills were being utilised." cG*
F	14.9	*"There's not been a lot of responsibility, that's for sure. I would have been ready to take on more earlier." cF* *"I am sure there is a stage within the year where you can let them off the leash a bit, and I'm sure I could do more than I'm doing, I just tend to be extra cautious." tF*

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The comments from trainees indicated that having more responsibility would have been beneficial in their development, which was supported by the findings of Williams et al. (154) The estimates of training workload at each site are shown in Table 4.23 alongside comments from respondents about managing the risk of delegating responsibility.

Table 4.23 Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about managing the risk of delegating responsibility[64]

Site	Training workload	Comments about managing the risk of delegating responsibility
A	3.1	"With a prereg you let them go slowly, slowly, slowly, once you are comfortable, fine." tA
B	4.9	"In my final ward rotation . . .for the first couple of hours I was a bit apprehensive because I was very aware of the responsibility being placed on my shoulders." cB
D	5.2	The thing is – the FY1s – who is teaching them? It is the pharmacist a lot of the time teaching them on the wards." pD
H	6.7	"If we learnt by doing. . . we would literally be the last person to see that error or problem – we're closer to the end." cH "We would need to risk assess it because there are always ways of overcoming the risks." tH "It is almost like passing a driving test – you pass it and then you think – Oh – I'm on my own." pH
C	6.9	"At the beginning – if I'd been asked to do too much on my own, I don't think I'd have been able to cope." cC "They will be given a ward, or a part of a ward to look after and a pharmacist will go round with them afterwards to check up on things." tC "From a legal perspective, I wouldn't be happy not having a pharmacist check." tC
E	7.3	"It is a big jump from being a prereg – over a weekend of getting your results – then you're actually a pharmacist. It would be better to increase your responsibility over the year and then it's not so much of a jump." cE "I don't like the fact that they are a student one day and a pharmacist the next." tE
G	7.6	
F	14.9	"The medics, they rely on us so much now and if you have got a pharmacist who is green as well, it is a bit frightening." tF

Several trainers and trainees were concerned about the risks to patient care of delegating too much responsibility, particularly in situations where other junior health professions were working in the same area. This is similar to the

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experience of Austin who had identified that pharmacy trainers were reluctant to delegate responsibility to pharmacy trainees on advanced practice placement experiences in USA because the legal and professional requirements of pharmacy practice presented day-to-day logistical problems about the degree to which trainees were supervised. (157)

Whilst there were risks in delegating responsibility, in this study some trainees had very little responsibility which ultimately would be detrimental to their development. This finding was not limited to trainees in the NHS in Wales. A longitudinal study of preregistration trainee pharmacists across Great Britain found that the trainees believed they had too little responsibility, which damaged their job satisfaction. (189) As several people pointed out in this study, the level of responsibility changed overnight once trainees registered as a pharmacist and it would have been beneficial if the process had been more gradual.

Question I.   Appropriate responsibility (Emergent hypothesis I)
Answer: Some evidence

The hypothesis may explain some of the variation between sites. Evidence from the case studies suggested that sites that delegated more responsibility to trainees used less training workload. Delegation had to be gradual to avoid putting patients at risk of harm.

Question J.   Could variations in training workload at different sites be explained by the extent to which sites focussed on higher levels of learning and professional development rather than competency-based learning? (Emergent hypothesis J)

In 2008, the use of competency-based learning (CBL) was widespread in healthcare in GB and additional vocational qualifications were being developed. They were designed to provide a degree of confidence in the ability of staff to perform specific tasks. However, critics were concerned about the workload involved in CBL and also whether it supported higher level thinking skills. (176) It was hypothesised that sites that focussed on the CBL approach needed more training workload than sites that used this type of learning to a lesser extent.

All training sites except A & F used the accredited checking technician (ACT) training programme, which had originally been developed for pharmacy

technicians, to prepare preregistration trainee pharmacists to perform the technical accuracy check of dispensed items. The time it took to complete the programme varied significantly across the other sites. The estimates of training workload at each site are shown in Table 4.24 alongside comments from each site about the ACT training.

Table 4.24 Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about problems with the Accredited Checking Technician (ACT) training programme[65]

Site	Training workload	Comments about the ACT training programme
A	3.1	*"One or two of the previous ones have only done 500 items but the plan is to put them through the ACT." tA* *"I didn't do the whole programme but could work as an ACT." pA*
B	4.9	*"Trying to get it out of the way at the start probably would not work." cB*
D	5.2	*"The ACT is very difficult to do at the moment with the way the techs work. Two of the prereg trainees have managed to do their items and the other hasn't. ACT has been a really big sticking point." tD*
H	6.7	
C	6.9	*"The first of this years' preregs have just been signed off as an ACT now (July) and they've got a month to practise. They are working alongside Band 5 technicians and yet the prereg is not doing it - they are three months from the end." oC* *"I would prefer to have done it sooner to accept responsibility and feel more useful." pC*
E	7.3	*"It is really difficult to get them through it. I tried to get it finished by Easter, but it should be before then." tE*
G	7.6	*"No matter how we try to speed them up through the ACT programme, we never seem to manage it." tG* *"At least if you can ACT you can do something – but to get there you have to spend all your time there." pG*
F	14.9	*"I would like to have done accuracy checking. I am not confident and haven't been signed off." cF* *"We certainly don't do the 1000 item check . . .it is a random sort of figure." tF*

Some trainees were accredited to perform technical accuracy checks soon after the Christmas break, whereas some never completed the programme. Many trainers had experienced problems with getting the trainees through in the timescale that was planned and were sceptical about being able to complete the ACT training any earlier. Trainees who had not completed their ACT training were sometimes held back in the dispensary and because they

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could not check, spent a lot of time performing basic dispensing. Some of the trainees took so long to complete their training that they never put the training into practice. Of particular concern was the fact that the trainees were being supervised by technicians, rather than pharmacists, whilst undertaking the ACT training. This relates to the other concerns about the roles undertaken and working with appropriate role models as has been discussed in relation to emergent hypothesis Hi.

Despite the problems with trainee progression and completion of the ACT programme, many people commented on the value of completing the training and being able to put it into practice. The estimates of training workload at each site are shown in Table 4.25 alongside comments from each site about the benefits of undertaking the ACT role.

At sites where trainees had been able to complete the ACT training and had practised checking during the training year, this responsibility helped build confidence and was useful preparation for being a pharmacist. Trainees who were able to complete their accuracy checking were able to move on to other duties. The fact that they were accredited to check allowed them to take the responsibility for checking in other situations, such as on the wards. This role was much more akin to that of a pharmacist and was useful for trainees making the transition from being a trainee to a responsible professional.

Question J. Competency-based learning (Emergent hypothesis J)
Answer: Evidence lacking

The hypothesis did not provide an explanation of the variation between sites. All sites used the ACT scheme, with the exception sites A & F, which were at the extremes of estimates of training workload. The scheme was widely criticised for taking too long and being pitched at the wrong level. However, it was clear that those trainees who were able to progress past the training and undertake responsibility for checking, for example at sites H & E, gained a lot from performing the technical accuracy checking role.

Table 4.25 Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about the benefits of undertaking a technical checking role[66]

Site	Training workload	Comments about the benefits of undertaking a technical checking role
A	3.1	"If you do get ACT status it gives you a certain amount of credibility in the department – but I would argue that you're pitching at the wrong level. Not that ACTs aren't important. . . . I would rather be clinically proficient than technically proficient." pA
B	4.9	
D	5.2	"If they had ACT they would be used as checkers, rather than dispensers." oD "It (ACT) would have helped confidence and been a big help." cD I didn't feel confident in that environment to tech check." pD
H	6.7	"I think essentially one of the big things you're doing as a pharmacist I suppose is making sure that the right thing, with the right instructions, has been given out. I think "ACTing" - actually doing it for real, now I'm actually doing it and its probably I'm the last person - it does make you stop and think a bit more." cH "I think that's why the ACT is good actually - I've just realised in the last few weeks. It's more real. Even though you think you've done something - you just sometimes think "Oh I've done that on autopilot" and I'll just check again. You check again . . . you're learning to trust your own decisions as well. You go back, and check and you have done it right, so you learn to trust yourself as well - and that's something you need as a pharmacist. A bit of confidence to trust your own decisions, to make the decisions." cH
C	6.9	
E	7.3	"I passed my ACT before the end of the prereg – I was then rota'd more to do the ACT role – the others who hadn't got it were used less in the dispensary as a result – I could do more." pE "That's why I like it – because it gives them that grey area." tE
G	7.6	
F	14.9	

Question K. Could variations in training workload at different sites be explained by the extent to which sites shared materials and resources with other centres? (Emergent hypothesis K)

Tutors expressed varying degrees of knowledge and contact with tutors from other sites. They all expressed a desire to receive more information about the training that was taking place at other sites, partly to enable comparisons with

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their own practices and partly to gather new ideas. The annual meeting of preregistration pharmacist tutors was mentioned by several respondents, and whilst it was useful, it did not provide an opportunity to discuss training practices with other tutors in the depth that was needed. The estimates of training workload at each site are shown in Table 4.26 alongside comments from each site about knowledge of training other sites.

Table 4.26   Estimates   of   training   workload   (hrs/wk/trainee)   for preregistration pharmacist training and comments about knowledge of training at other sites[67]

Site	Training workload	Comments about knowledge of training at other sites
A	3.1	"Something perhaps on an All Wales basis would be very useful . . . it would be nice to have a feel for when people start clinical pharmacy, when people are allowed to go on their own to wards, what wards do they go to." tA
B	4.9	"I don't know what x does with her preregs or y in z hospital. I have never seen their plan, so I don't really know in a lot of detail how their preregs are trained." tB
D	5.2	
H	6.7	"Perhaps we could go back to forming links between tutors and sharing good practice - if you had those links in a more formal basis, because my current links are all friends, so I can phone them but I think if you had things like shared tutorials you may get some good practice and be better." tH "There is nowhere central for us to put all the good practice and I think we could improve it really." tH
C	6.9	
E	7.3	"I pick up different things in the E&T subgroup meetings and that's about all really." tE
G	7.6	"We don't know what the other people are doing – so I think we could probably do more on that." tG
F	14.9	"I would always like to know how other places manage the number of preregs together, say Cardiff is close to a number of places, or Bridgend is close to Cardiff, you know what I mean, do they have a system in place where they gather preregs together and do any, I would like to know what they are doing." tF "I don't know what goes on at other sites to be honest, I don't know how they deliver their training." tF "I've been doing the training for years and years, a younger tutor might be doing it quite differently. I would like knowledge of that and maybe I could use a different approach then." tF

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Tutors expressed a desire to be able to access more training resources. When respondents were probed about the possibilities of sharing existing materials between training sites in Wales, the ones that did not have extensive programmes of tutorials were in favour of having access to more, and those that already produced tutorial programmes expressed a willingness to share their information. This was seen as potentially a useful way of making good use of training resource. The estimates of training workload at each site are shown in Table 4.27 alongside comments from respondents about sharing materials.

Table 4.27   Estimates   of   training   workload   (hrs/wk/trainee)   for preregistration   pharmacist   training   and   comments   about   sharing materials with other sites[68]

Site	Training workload	Comments about sharing materials with other sites
A	3.1	*"If we knew that x was doing an tutorial with preregs this morning then our prereg could listen in and contribute." tA*
B	4.9	
D	5.2	
H	6.7	*"I think we have got the training room available that we could accommodate and we would happily." tH*
C	6.9	*"It would be feasible to get a group together and run tutorials like that and we most probably don't do enough of it." tC* *"We could link with other preregs or with staff in the same department." pC*
E	7.3	
G	7.6	*"A programme of tutorials that everybody could access would save a lot of work." tG*
F	14.9	*"Because we are further away, we feel we have to do everything ourselves." tF*

Question K.   Sharing of materials (Emergent hypothesis K)
Answer: Evidence lacking

The hypothesis did not provide an explanation of the variation between sites. None of the sites shared materials to any great extent at the time of the study although a number of sites expressed an interest in being able to access materials from elsewhere.   Sites with several trainees tended to prepare tutorials and other training materials.   It was acknowledged that there may be benefit in sharing some of these materials more widely.

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Question L. Could variations in training workload be explained by the extent to which sites adopted the use of information technology for training purposes? (Emergent hypothesis L)

Most tutors and trainers at the case study sites had little or no experience of the use of e-learning technology, with the exception of a few resources, such as the Medicines Information Computer Assisted Learning (MICAL) package and internet resources. In some cases, there was a lack of awareness of what resources were available and the time that it would take to seek out possible resources was a deterrent (site B). In other cases, packages were available but were not used (site D). The estimates of training workload at each site are shown in Table 4.28 alongside comments from each site about the use of information technology in learning.

Table 4.28   Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about the use of information technology in learning[69]

Site	Training workload	Comments about use of information technology in learning
A	3.1	*"There is something around the teleconferencing site of it which we could be looking at with preregs." tA*
B	4.9	*"I must admit I'm not one for trawling the Internet." tB*
D	5.2	*"There is a training package – we just don't use it. There is a training account we could easily use." oD*
H	6.7	*"With teleconferencing it is harder for the tutor to engage with the people in the room that is distant – it is possibly useful when distance is a bigger issue than it is for us." oH*
C	6.9	
E	7.3	
G	7.6	*"The medicines information pharmacist is doing six half day workshops in the computer training suite . .can introduce them to all the databases and then spend a week in Medicines info and run real queries." tG*
F	14.9	*"Funnily enough, someone set X up in the office with it (teleconferencing) last week and he was able to participate." tF*

When respondents were asked about using electronic communication to facilitate access to training, it appeared that most sites had some access to teleconferencing facilities, but experience of using it was very limited. Respondents at sites that were geographically remote from other centres were

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more receptive to suggestions of the use of on-line tutorials or teleconferencing.

Dispensing and labelling was one area where learning technologies were thought to have some potential advantages. Most sites in Wales used the same computer package for generating labels, but each trainee was trained on a one-to-one basis. There was a large influx of new trainees into pharmacy departments each August. This caused a training bottleneck at most sites because all new pharmacy staff needed to undergo training in labelling and dispensing prior to being able to work in the dispensary. This was compounded by the fact that in the summer time many permanent staff took annual leave and so there were fewer people around to deliver the service. Most of the basic training was standard in nature and may have been suitable for incorporation into an e-learning package. The estimates of training workload at each site are shown in Table 4.29 alongside comments from each site about bottlenecks.

Table 4.29 Estimates of training workload (hrs/wk/trainee) for preregistration pharmacist training and comments about dispensing training[70]

Site	Training workload	Comments about dispensing training
A	3.1	*"The initial three month period is very demanding." tA* *"I think the initial period would be the difficult one." tA*
B	4.9	*"August is always the time for new staff. . .my dispensary manager has already said she doesn't want them (the prereg) in the dispensary in August." tB*
D	5.2	*"At the beginning of the year you can put quite a lot in to students." tD*
H	6.7	*"The only clash was the ACT – because the 3 of us were fighting over figures." cH*
C	6.9	*"You sometimes have so many people in there, chasing numbers within the dispensary that it becomes very difficult to manage." tC* *"We recognise that August is a problem." tC* *"An electronic package on labelling and dispensing would certainly help." tC* *"They should be able to generate a label etc before they go into the dispensary environment." tC*
E	7.3	
G	7.6	*"They are all fighting for the same evidence at the same time." tG*
F	14.9	

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Question L.   Use of information technology (Emergent hypothesis L)
Answer: Evidence lacking

This hypothesis did not provide an explanation of the variation between sites because none of the sites used information technology to any great extent at the time of the study.   Some sites expressed an interest in packages for dispensing and labelling training and for using teleconferencing to access live tutorials to avoid the need to travel long distances.

Discussion of key findings

This study aimed to explore preregistration pharmacist training in NHS hospitals in Wales.   The first objective of the study was to develop a deeper understanding of preregistration pharmacist training practices at the case study sites.   This was achieved by gathering data from a number of sources within each case study site.   This provided the researcher with a much deeper understanding of the training practices that were being employed from the perspectives of a variety of stakeholders.

The second objective was to identify training practices that had an influence on training workload.   Twelve emergent hypotheses were identified from the literature review and one further hypothesis was identified whilst conducting the case studies.   A summary of the emergent hypotheses and those which were supported by evidence from the case studies is shown in Table 4.30.

The hypotheses could be categorised as being about trainees' roles and responsibility (hypotheses B, C, H, Hi & I), the content and level of the training programmes (hypotheses D, F, G & J) and making the best use of existing resource by minimising duplication (hypotheses A, E, K & L).

None of the emergent hypotheses were found to wholly explain the variation in training time between sites. Possible reasons for this included;

- the intrinsic and extrinsic variation between sites may have meant that what may have been effective at reducing training workload at one site may not have been (as) beneficial at another;
- the sample size may have been too small to explain the variation;
- the inter-related nature of the training practices such that use of one or more training practice(s) that required high training workload could

have cancelled out the evidence of any effect of other training practices that were effective at reducing training workload.

Table 4.30   Summary of emergent hypotheses

ID	Emergent Hypothesis	Outcome
	Variations in training workload could be explained to some extent by the degree to which:	
A	sites took prior learning into account to avoid repetition of previously covered material	Evidence lacking
B	tutors and trainers supported trainees to take responsibility for their own learning	Some evidence
C	trainees had access to a supervisor for sufficient time that they were in a position to delegate appropriate responsibility	Some evidence
D	sites exposed trainees to a number of different role models rather than rely on a limited number of specialist tutors	Evidence lacking
E	sites ensured that trainers understood their role and had knowledge of how their training contributed to the overall objectives of the trainee	Some evidence
F	sites lengthened the duration of rotations rather than a providing a high number of short duration rotations	Some evidence
G	sites delivered training that was focussed on development of core skills rather than delivering specialist knowledge	Some evidence
H	sites ensured that trainees made an appropriate contribution to the work of the service	Some evidence
Hi	sites ensured that trainees performed appropriate roles (under supervision) during their training	Some evidence
I	sites delegated appropriate levels of professional responsibility to trainees	Some evidence
J	sites focussed on higher levels of learning and professional development rather than competency-based learning	Evidence lacking
K	sites shared materials and resources with other centres	Evidence lacking
L	sites adopted the use of information technology for training purposes	Evidence lacking

Eight of the thirteen emergent hypotheses were supported by some evidence from the case studies, although overall, the evidence was inconclusive. Contradictory examples existed where sites that did not use a practice had lower estimates of training workload. Case study evidence was lacking to support the remaining five emergent hypotheses. These were emergent hypotheses A (use of prior learning); D (access to different role models); J (competency-based learning); K (sharing of materials) and L (use of information technology). Practices in these areas were found to be similar across all case study sites and so no comparisons between sites that used the strategies and those that did not could be used to demonstrate their value in managing workload. These emergent hypotheses had face validity (that is, superficially, they appeared to be reasonable) (75) and therefore were not totally disregarded.

On review of the evidence from the case studies, the researcher observed that training practices at some case study sites may not have made optimal use of training capacity.

Some evidence indicated that trainees did not have appropriate levels of responsibility, for example:

- some trainees did not take adequate responsibility for their own learning, apparently considering themselves to be students rather than professionals which led to wasted time;

- some trainees did not have regular supervision from a consistent source, and so may not have received effective feedback which could delay development of competence and confidence;

- some trainees did not have sufficient responsibility for patient care which would inhibit learning.

The content and level of some training was not appropriate, for example:

- some training rotations were too short to develop competence - once trained, they were moved on before being able to put what they had learnt into practice or contribute effectively to service delivery;

- some training rotations, that were only intended to achieve awareness, were too long, potentially wasting time;

- some trainees spent large amounts of time performing pharmacy technician roles – this appeared to limited their opportunity to practise the roles that they would be expected to be competent in once registered as a pharmacist;

Effective use was not made of existing training resource, for example:

- there was a lack of shared understanding about the aims and objectives of preregistration pharmacist training at some sites – which may have led to missed opportunities as well as wasting capacity by delivering training that did not contribute to the aims of the training programme.

Based on these observations, the researcher developed three strategies that were aimed at optimising training capacity. These were:

1. Ensure preregistration trainee pharmacists have appropriate levels of responsibility

2. Ensure that the content and level of preregistration pharmacist training is appropriate

3. Ensure that effective use is made of existing training resource

A number of provisional recommendations were drafted for inclusion in each strategy. The strategies and provisional recommendations are shown in Table 4.31, 4.32 and 4.33. The recommendations described practices aimed at reducing training workload and/or improving training quality (both of which would optimise training capacity). The concept of quality had not been considered as being of particular importance to this study until this point in the research. The definition of capacity that had been used related purely to workload (87) and stated *"Capacity can be described as a measure of the amount of work that a system can perform (as opposed to workload which describes what is actually being done)"*. This quote was made in the context of the manufacturing industry where processes are standardised. However, when considering pharmacy training there was a need to consider how things were being done as well as considering how much was being done. Harvey and Green, (190) defined quality in relation to Higher Education, as being something which is "fit for purpose". The case study evidence had demonstrated that some of the training practices that were employed may not have been "fit for purpose".

Table 4.31   Emergent hypotheses and resultant provisional recommendations in Strategy 1

Strategy 1:   Ensure preregistration trainee pharmacists have appropriate levels of responsibility

Emergent hypotheses: **Variations in training workload could be explained by the extent to which:**	• tutors and trainers supported trainees to take responsibility for their own learning (B) • trainees had access to a supervisor for sufficient time that they were in a position to delegate appropriate responsibility (C) • sites exposed trainees to a number of different role models rather than rely on a limited number of specialist tutors (D) • sites ensured that trainees made an appropriate contribution to the work of the service (H) • sites ensured that trainees performed appropriate roles (under supervision) during their training (Hi) • sites delegated appropriate levels of responsibility to trainees (I)
Provisional Recommendations:	a. Ensure that preregistration trainee pharmacists spend a significant amount of time (equivalent to at least 2 months) working directly alongside their RPSGB tutor in the clinical environment in an apprenticeship-style relationship b. Ensure that once accredited to undertake technical accuracy checking, preregistration trainee pharmacists undertake checking of dispensed items on a regular basis c. Ensure that preregistration trainee pharmacists are regularly coached and challenged by pharmacists about the appropriateness of the medicines they are checking d. Maximise the number and/or duration of rotations that provide opportunities for trainees to spend time performing roles usually undertaken by a pharmacist

Table 4.32   Emergent hypotheses and resultant provisional recommendations in Strategy 2

Strategy 2   Ensure that the content and level of preregistration pharmacist training is appropriate

Emergent hypotheses: Variations in training workload could be explained by the extent to which:	• sites lengthened the duration of rotations, rather than providing a high number of short duration rotations (F) • sites delivered training that was focussed on development of core skills rather than delivering specialist knowledge (G) • sites focussed on higher levels of learning and professional development rather than competency-based learning (J)
Provisional Recommendations:	a. Ensure that preregistration trainee pharmacists undertake the Preregistration Accuracy Checking Experience (PACE) training programme b. Aim to complete the PACE programme within the first 4 months of the year c. Minimise the number and/or duration of rotations undertaken by preregistration trainee pharmacists where they are NOT able to perform a hands-on role d. Ensure that the bulk of preregistration pharmacist training takes place in generalist areas e. Ensure that preregistration pharmacist training is pitched at a level that is appropriate to the skills and experience of the trainees

Table 4.33   Emergent hypotheses and resultant provisional recommendations in Strategy 3

Strategy 3   Ensure that effective use is made of existing training resource

Emergent hypotheses: Variations in training workload could be explained by the extent to which:	• sites took prior learning into account to avoid repetition of previously covered material (A) • sites ensured that trainers understood their role and had knowledge of how their training contributed to the overall objectives of the trainee (E) • sites shared materials and resources with other centres (K) • sites adopted the use of information technology for training purposes (L)
Provisional Recommendations:	a. Ensure that the purpose of each rotation that the trainee undertakes is made explicit b. Hold a regular annual meeting with trainers from all sections to ensure that the aims and delivery of preregistration pharmacist training are aligned across the organisation c. Using existing resource and expertise where possible, collaborate between sites to build shared access to a programme of video-conference tutorials d. Use simulation software and computer assisted learning (CAL) packages to provide resources that facilitate training and assessment of key skills and competencies

Discussion of the method selected

In this study, case study research was used in order to generate theories about reasons for variation in training workload between sites. It was recognised that training is a complex phenomenon and that the boundaries between training and the context in which it is delivered (healthcare) were not clearly evident. Therefore, case studies were an appropriate method for studying this field. The use of several information sources was particularly useful because it allowed for the gathering of data that provided a multi-dimensional picture of each study setting. If the information had all come from one source, other, sometimes contradictory perspectives would have been missed. The use of the literature and the case study evidence to generate theory was a useful way of exploring a new topic where little was already known about the subject.

The case study generated a large volume of data, but because many of the factors under investigation were interrelated the impact of particular practices could not be isolated from other potentially contributing factors. As a result, none of the emergent hypotheses were wholly proven. An experimental study approach, where other variables could be identified and controlled would be necessary if more evidence were required. There would be difficulties in controlling variables in a real-life setting such as this one.

The sample of eight case study sites from a population of sixteen had been selected to maximise variation in the study and this variation had been demonstrated. This variation within and between sites could mean that the results were not generalisable to the wider population of NHS hospital preregistration pharmacist training sites in Wales. Whilst acknowledging the limitations of the study method, this case study has provided some evidence to identify training practices to include in the strategies and recommendations that were produced.

It was not possible to obtain the views of all the people who were involved in training at the case study sites. The opinions of those who did not participate might have provided further insights that may have strengthened or countered the views provided by the study respondents. In particular, it was not possible to visit site F, which had the highest estimate of training workload of all the

study sites (14.9 hrs per week per trainee). This may have provided additional insights about why the estimate of training workload was so high at that site compared with other sites.

Priorities for the next stage of the research

The provisional strategies and recommendations that were developed as a result of this research were aimed at optimising NHS training capacity for the NHS in Wales. There was a need to evaluate whether or not the findings were representative of the wider population of NHS hospital pharmacy training sites in Wales.

The provisional strategies and recommendations that had been developed from the emergent hypotheses and case study evidence needed to be tested to determine their suitability for use in the wider population. In addition, the impact that the introduction of the strategies would have on training capacity and quality needed to be assessed.

Conclusions

This chapter has explored reasons for variations in preregistration pharmacist training workload in NHS hospitals in Wales using a case study approach. A 100% response rate meant that information could be gathered from all eight sites in the case study sample.

The findings confirmed that NHS hospital preregistration pharmacist training practices differed across sites in Wales and that this may provide an explanation for differences in estimates of training workload between sites, although no specific theories were proven. A number of practices were noted that did not appear to make optimal use of training capacity.

The case study evidence was used to develop a number of provisional strategies and recommendations aimed at optimising training capacity in NHS hospital preregistration pharmacist training sites in Wales.

The next chapter will describe the further development of the provisional recommendations aimed at optimising NHS hospital preregistration pharmacist training capacity in Wales.

Chapter 5

Recommendation development

Introduction

Research described in Chapter 3 identified that the mean training workload involved in preregistration pharmacist training at NHS hospitals in Wales was estimated to be 6.5 hours per week per trainee (range 3.0–14.9). Case study research described in Chapter 4 explored NHS hospital preregistration pharmacist training further and generated emergent hypotheses that may have explained the variation in estimates of training workload. The emergent hypotheses were used to develop strategies and provisional recommendations for practice that would optimise NHS hospital preregistration pharmacist training capacity. The provisional recommendations are further developed during work described in this chapter.

Chapter outline

This chapter begins by explaining how case studies can make an important contribution to unfolding research by providing direction to subsequent stages of studies. The chapter then describes a survey involving a questionnaire, a follow-up interview with respondents and a group discussion. These were used to judge whether or not the case study findings were representative of the wider population and inform the development of the provisional recommendations. The final recommendations are presented at the end of this chapter. The chapter concludes with a discussion about the process of conducting the research.

Use of case study findings to inform research development

Punch at p148 (48) had described how case study research can be critical when used in combination with other research approaches to "flesh out" the picture. This can reduce the risk that the data collection misses some aspects of value and becomes superficial. This approach is also advocated by Yin at p5 (184) who explained that exploratory case studies of the type described in Chapter 4 can generate hypotheses that become the subject of subsequent research. In the present study, data from eight case study sites had identified several practices that potentially had an influence on training workload. This

had resulted in the creation of provisional recommendations to optimise training capacity. More research was needed to develop the provisional recommendations and ensure that they were suitable for all sixteen NHS hospital preregistration pharmacist training sites in Wales. Use of the case studies to identify topics of relevance had enabled the research to move forward to assess a broader spectrum of practices than would otherwise have been possible.

Dissemination of information about the provisional study findings

In the period between the conduct of the case studies and the survey described in this chapter a management report of the findings of the research was presented to the Welsh chief pharmacists' committee. (191) A summary of the key findings, which included the provisional strategies and recommendations was circulated to all NHS hospital pharmacy training sites in Wales. All of the participants in this study had the opportunity to read the recommendations and potentially implement one or more of them before this survey took place.

Aim and objectives of the study

The aim of this study was to develop recommendations for practice that would optimise NHS hospital preregistration pharmacist training capacity in Wales. The objectives of the study were to:

- determine whether or not training practices that were not "fit for purpose" were used at NHS hospital preregistration pharmacist training sites in Wales;
- establish whether or not preregistration pharmacist tutors agreed with provisional recommendations aimed at optimising training capacity;
- establish whether or not NHS hospital preregistration pharmacist training sites in Wales had implemented, or planned to implement, the training practices described in the provisional recommendations;
- assess the impact of the implementation of the training practices described in the provisional recommendations on training capacity;
- produce final recommendations for use by NHS hospital preregistration pharmacist training sites in Wales.

Method

Local Research Ethics Committee Approval

Notification that this project had been entered on Pontypridd & Rhondda NHS Trust's research register was received in April 2008 (Appendix 12). Cardiff University agreed to be the sponsor for the research (Appendix 13).

Study design

The model for development of study design proposed by Black at p27 (74) and summarised in Figure 5.1 was used as a framework for the design of this study.

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┌───────────┐      ┌───────────────┐      ┌────────────┐      ┌──────────┐
│ State     │      │ Select research│      │ Identify   │      │ Design   │
│ research  │─────▶│ approach and  │─────▶│ population  │─────▶│ method   │
│ questions │      │ method        │      │ and sample  │      │          │
└───────────┘      └───────────────┘      └────────────┘      └──────────┘
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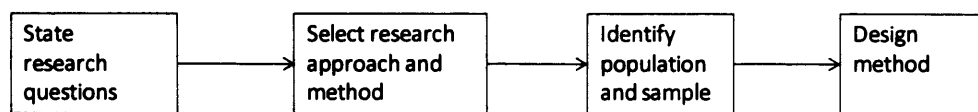
Figure 5.1   Stages of planning a study (adapted from Black, 1999). (74)

Research questions

In this study, the research questions needed to establish whether or not implementation of training practices that had been identified could optimise training capacity at NHS hospital preregistration pharmacist training sites in Wales. The specific research questions that needed answering included: "Were training practices that were not "fit for purpose" in use in the study population?"; "What was stakeholder opinion about the provisional recommendations about training practices?"; "Had any of the provisional recommendations been implemented or were there plans to implement them?"; "What impact would implementation of the provisional recommendations have on training capacity?"; "Were any changes to the recommendations needed before being formally adopted?". The research questions would result in the collection of quantitative data to describe the practices that existed and qualitative data in the form of stakeholder opinion.

Research approach

The choice of research approach is influenced by the type of data being collected. In general, qualitative approaches are suitable for descriptive studies and quantitative approaches are suitable for explanatory studies. (48) In this case, a quantitative approach was selected to describe training

practices that existed across the population of NHS hospital preregistration pharmacist training sites in Wales. Quantitative approaches include experimental, quasi-experimental and non-experimental designs. Non-experimental approaches are appropriate in situations where there are independent variables that are outside the control of the research, as was the situation in the present study. (48)

Research method

Punch at p75 (48) explained that surveys may be a suitable method of data collection in non-experimental research as they can be used to gather factual information as well as measures of attitudes and opinion. (48) In this study, a survey method was selected to obtain factual information about training resources and practices at each site as well as gathering stakeholder opinion about the provisional recommendations.

Advantages of a survey for this phase of the research were that:

- they were useful for gathering standardised information from all participants; (75)
- they would ask all the respondents the same questions in similar circumstances; (78)
- they would gather data on a "one-shot" basis and were economical and efficient. (75)

The survey instruments that could have been used were observations or questionnaires (administered by post or as a structured interview). The questions that needed answering were mainly closed in type, requiring short answers and so a written questionnaire was considered appropriate and cost effective. (129)

Population

The Hospital Pharmacy Pre-registration Training in England and Wales National Recruitment Scheme Handbook (192) was used to identify the main contact person for preregistration pharmacist training in NHS hospital pharmacy departments in Wales. The contact person had overall responsibility for preregistration pharmacist training at their training site and so would be in a position to answer questions about the whole programme from an informed viewpoint. The person was asked to respond on behalf of the training site and was informed that they were the only person at their site that

had been asked for this information. Sixteen contact people from sixteen training sites were identified and all were included in the study as it was feasible to do so.

Design method

Findings from the case studies described in Chapter 4 were used to develop a questionnaire (Appendix 26) that sought information about specific aspects of preregistration pharmacist training practice for the 2008/9 cohort. This was the current training year and was chosen because respondents were thought likely to be able to provide the information because it was recent and the information should have been easy to recall or, if necessary, appropriate records could be readily located. Questions about training plans for the forthcoming training year may not have been answered as accurately as not all the information may have been known. Respondents' views about issues relating to training capacity and the provisional recommendations were gathered using five-point Likert scales using categories of strongly agree, agree, neither agree nor disagree, disagree and strongly disagree. (75) This allowed for a degree of sensitivity of responses to be gauged whilst retaining the ability to obtain and analyse numerical data. The respondents were asked whether the recommended practices were already in place at their site or if there were plans to implement the practices. Finally, the respondents were asked to predict the likely impact of the recommendations at their site using a five-point Likert scale. Categories of significant decrease, small decrease, no impact, small increase and significant increase were used to estimate the impact of the practices on training capacity and quality.

Questionnaire pilot

A pilot questionnaire was sent to the All Wales Education and Training Pharmacist. This post-holder was selected for the pilot as they had previously held a post as the main contact person for preregistration pharmacist training in a training site in Wales. They had been a participant in the earlier study (185) and so had the required background knowledge to answer the questions without needing additional explanation. Their involvement did not preclude the site where they had worked from being included in this study as there was another tutor in post at the site who had also been involved in the earlier phases of the study.

Questionnaire revision

The questionnaire was reviewed after the pilot to implement any changes deemed necessary.

Questionnaire distribution

The questionnaires were sent by e-mail to the contact person for preregistration pharmacist training at the sixteen NHS hospital pharmacy training sites in Wales. Non-respondents were followed up by e-mail.

Developing a consensus about the provisional recommendations

The questionnaire responses were reviewed to identify any provisional recommendations that were not universally supported. Respondents who had not agreed with any of the provisional recommendations were contacted to discuss their responses in order to gain an understanding of the reason(s) for their non-agreement and potentially to identify changes to the recommendations that would make them acceptable. A semi-structured interview conducted over the telephone on a one-to-one basis with each respondent was considered appropriate and cost-effective for gathering this information. The topics for discussion were focussed on specific details about the recommendations and so the interviews were expected to be of relatively short duration. Advantages and disadvantages of interviews as a data collection tool were discussed in Chapter 2. Reasons for the choice of this method in this case were:

- a semi-structured interview format provided the opportunity to probe respondents about their views and identify any areas of misunderstanding;

- a one-to-one format ensured that all of the individual respondents' views were obtained without them being biased by hearing the views of other participants, or being afraid of expressing a contradictory view;

- telephone interviews were used because the respondents were located in hospital sites across Wales and so face-to-face interviews were not considered to be an efficient way of gathering the data. (76)

Development of interview schedule

The responses in Section four of the questionnaire (Appendix 26) (which used Likert scales to determine the respondents' level of agreement, disagreement or otherwise with recommendations to optimise training capacity) were

reviewed to identify the provisional recommendations that respondents had not agreed with. An interview schedule (Appendix 27) was developed to identify any potential reasons for disagreement with each provisional recommendation. Questions about each recommendation were printed on separate sheets of paper so that after each interview the annotated questionnaire schedule could be physically separated by recommendation.

Recording and analysis of the interview data

The interviews were recorded on a Sanyo TRC-6300 dictating/transcribing micro-cassette recorder. The researcher wrote down responses to the interview questions on a paper copy of the question schedule whilst conducting the interviews. This was possible as several of the questions were closed and so responses were relatively short and easy to document. The researcher listened to the recorded interviews immediately after each interview to correct and add any further details to their notes. After all of the interviews had been completed the interview notes from each person were separated and sorted into responses about each provisional recommendation. Each provisional recommendation was then re-considered to understand the reasons for disagreement with the original recommendation and identify possible changes that may address the issues that had been raised.

Consultation on final recommendations with stakeholders

A discussion paper (Appendix 28) was developed that summarised the feedback that had been received about the provisional recommendations and proposed amendments that were aimed at addressing the concerns of respondents. This paper was used to inform a discussion with the members of the education and training subgroup that aimed to enable the group to reach a consensus about final recommendations and endorse them for use in NHS hospitals in Wales. The paper was circulated to group members prior to the meeting to allow them time to consider the revised recommendations and if necessary consult with other colleagues from their training site. Furthermore, it allowed members of the subgroup who were not able to attend to meeting to provide comments in advance of the meeting. This process allowed the lead tutors from all NHS hospital pharmacy training sites in Wales to have an opportunity to comment on the recommendations before they were finalised.

Presentation of results

The findings of Section one (organisation and staffing data), Section two (preregistration training practices) and Section three (representativeness of case study findings) of the questionnaire are presented sequentially using descriptive statistics (means and ranges) where appropriate to aid presentation of the quantitative data.

The remainder of the research findings from Section four (recommendations to optimise training capacity) and five (assessment of the impact of the recommendations) of the questionnaire, the telephone interviews and the group discussions are presented together. This allowed each provisional recommendation to be presented and discussed in turn. This presentation format was selected because the data were interrelated and need to be considered together. This approach helps the reader to understand the rationale for recommendation development and replicates the process that was used by the researcher during the synthesis of the final recommendations. This approach also avoids unnecessary repetition of details about each recommendation at different stages in the report.

Results and Discussion

Response to the pilot questionnaire

The pilot questionnaire was sent by e-mail on 19 March 2009 and the completed questionnaire was returned by e-mail on 26 March 2009. The pilot respondent indicated that the questionnaire had taken 45 minutes to complete, including time taken to write comments about the questionnaire itself. They estimated that it would probably have taken 30 minutes to complete if no comments had been made. The following changes were made to the questionnaire after the pilot:

- a table requesting details about the number of tutors and managers was simplified;

- questions relating to accredited checking technician training (ACT) were changed to refer to the term that was in use for preregistration pharmacist training, "technical accuracy checking";

- the order of the possible responses in the Likert scale was changed so that "strongly agree" was in the first column after the statement and "strongly disagree" was on the far right of the page, and all other responses reversed. The pilot respondent had found the original ordering, where "strongly disagree" was in the column next to the statement, to be confusing;

- a recommendation that originally said to "increase" the duration of rotations was changed to "maximise" to be more specific.

Participants and settings

The sixteen hospital training sites that were identified from the National Recruitment Handbook (192) are shown in Table 5.1 and can be located by city or town on the map of Wales attached as Appendix 9. Each site was allocated a unique site code (a – p) to allow presentation of the findings in an anonymised format[71].

Response rate

The questionnaires were sent to the sixteen identified contacts by e-mail on 31 March 2009. Twelve (75%) responses were received by the deadline of 30

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[71] These site codes related to different hospitals/sites to those in the study described in Chapter 2 to retain anonymity.

April 2009. Non-responders were followed up by e-mail and telephone, which resulted in the remaining four responses being returned by 28 May 2009. After follow up, there was a 100% response rate to the questionnaire.

Table 5.1   Hospital training sites (in alphabetical order of city/town)

City/town	Hospital name	Name of NHS Trust
Abergavenny	Nevill Hall Hospital	Gwent Healthcare
Aberystwyth	Bronglais Hospital	Ceredigion
Bangor	Ysbyty Gwynedd	North West Wales
Bridgend	Princess of Wales Hospital	Bro Morgannwg
Cardiff	UHW and Llandough	Cardiff and Vale
Carmarthen	West Wales General	Carmarthenshire
Haverfordwest	Withybush General Hospital	Pembroke & Derwen
Llanelli	Prince Phillip Hospital	Carmarthenshire
Llantrisant	Royal Glamorgan Hospital	Pontypridd & Rhondda
Merthyr Tydfil	Prince Charles Hospital	North Glamorgan
Newport	Royal Gwent Hospital	Gwent Healthcare
Port Talbot	Neath Port Talbot Hospital	Bro Morgannwg
Rhyl	Glan Clwyd Hospital	Conwy & Denbighshire
Swansea	Morriston Hospital	Swansea Hospitals
Swansea	Singleton Hospital	Swansea Hospitals
Wrexham	Wrexham Maelor Hospital	North East Wales

Questionnaire Findings

Section one: Organisation and staffing data

1.1   Hospital training site data

There was a mean of 27 wards per site (range 11–92) and a mean of 587 hospital beds per site (range 200-1850). The number of hospital wards and beds at each study site are shown in Figures 5.2 and 5.3 respectively, illustrating the range of size of the training sites in the study population.
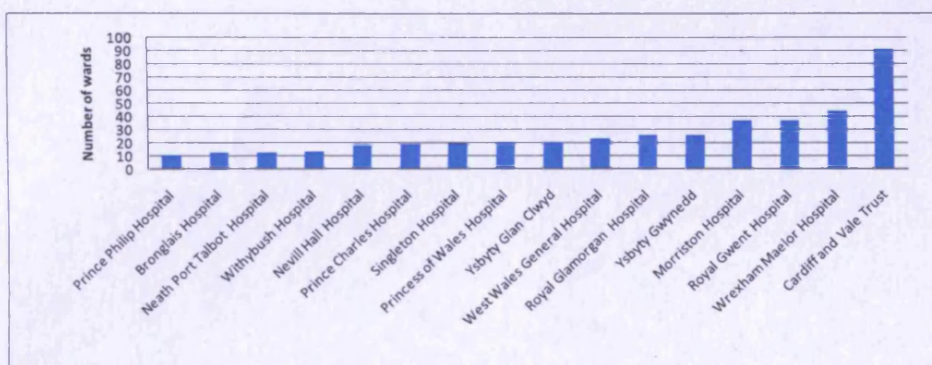
Figure 5.2   Number of wards at each training site
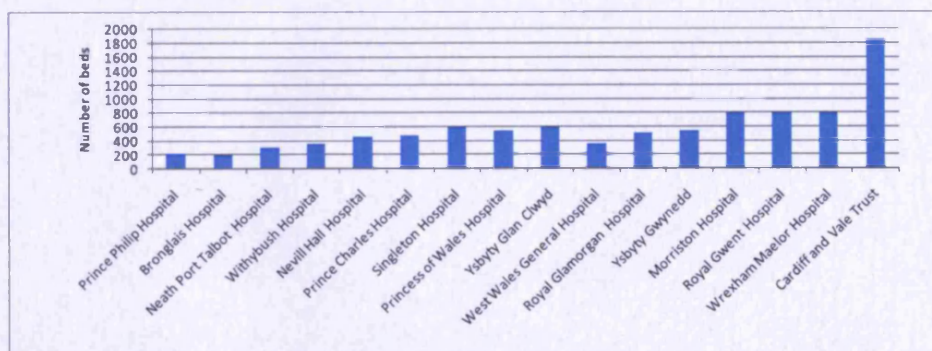
Figure 5.3   Number of hospital beds at each training site

Cardiff and Vale NHS Trust was the largest NHS Trust in Wales. Unlike other large Trusts in Wales (for example, Swansea and Gwent) the training programme was organised on a Trust-wide, rather than on a hospital site basis and so data in Figures 5.2 and 5.3 are for the whole Trust which partly explains why they appear so much higher than at other training sites.

1.2   RPSGB approved preregistration trainee pharmacists, managers and tutors

Number of trainees at each site

In the 2008/9 cohort there were 35 preregistration trainee pharmacists in the NHS in Wales. There were between one and five preregistration trainee pharmacists at each site as shown in Figure 5.4.
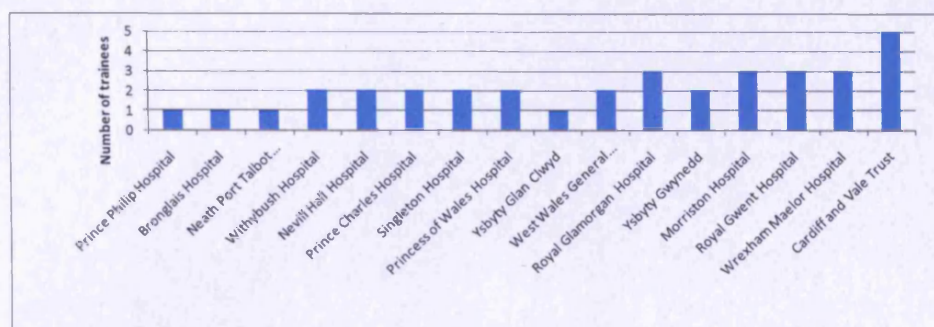
Figure 5.4 Number of preregistration trainee pharmacists at each training site

Number of RPSGB approved tutors and managers at each site

A total of 38 people were identified at 16 sites who were formally involved in preregistration pharmacist tutoring. The numbers of RPSGB approved tutors and managers at each training site for the 2008/9 cohort is shown in Figure 5.5[72].
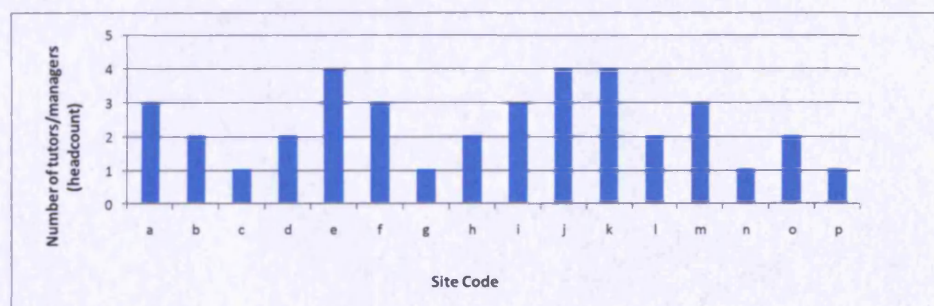
Figure 5.5 Number of RPSGB approved tutors/managers at each training site

Training capacity may have been affected by the number of people who were formally involved in training and therefore would be expected to understand the requirements of the training programme. It may also have been important for succession planning. There was a mean of 2.4 RPSGB approved tutors and managers at each site (range 1–4). Four sites only had one tutor, which may have led to problems if that person was suddenly unable to undertake their tutoring role for any reason. In contrast, the remaining 12 sites had several people who were either directly involved in tutoring, or had overall

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[72] The site codes have been used from this point forward in the results to preserve anonymity. The site codes are not in the same order as the data in Figures 5.2 – 5.4.

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management responsibility for the programme. At seven of these sites, the person who had the role of RPSGB preregistration manager did not have a direct role in tutoring any trainees in the current cohort, but could have undertaken a tutoring role if required. Sharing of the training workload may have been beneficial for tutor confidence and morale. (159) The ratio of tutors to trainees at each site is shown in Figure 5.6. The majority (26/38) of preregistration pharmacist tutors was directly responsible for one trainee. In contrast, at site p, one tutor/manager was responsible for two trainees and in site g, one tutor/manager was responsible for three trainees. Site f had three tutors and normally had three trainees but they had only recruited one trainee for the current year, which explains the high ratio of tutors to trainees.
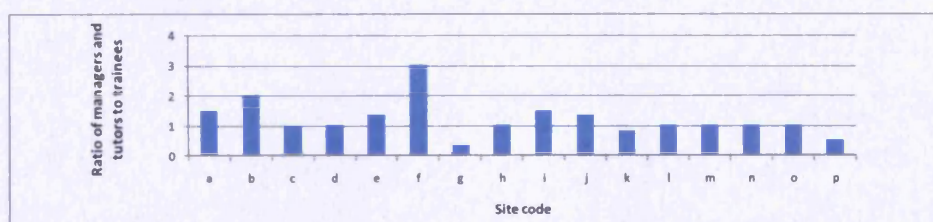
Figure 5.6   Ratio of tutors and managers to trainees at each training site

Time spent by RPSGB tutors and managers on training of preregistration trainee pharmacists

The mean time that was spent on preregistration pharmacist training by RPSGB tutors/managers at each site was 4.4 hours per week per trainee (range 0.6-11.5), as shown in Figure 5.7. Assuming that the majority (but not all) of the training workload was undertaken by these tutors/managers, these data support the findings of the earlier research described in Chapter 3 that estimated total training workload was a mean of 6.5 hours per week per trainee (range 3.0-14.9). The remainder of the training workload may have been undertaken by other people (for example, other pharmacists, technicians or administrative staff). The percentage of working hours that RPSGB approved preregistration pharmacist tutors/managers estimated that they dedicated to preregistration pharmacist training ranged from 0% to 50%. For those who were actively tutoring a trainee in the current cohort, the range was 2% to 50%.

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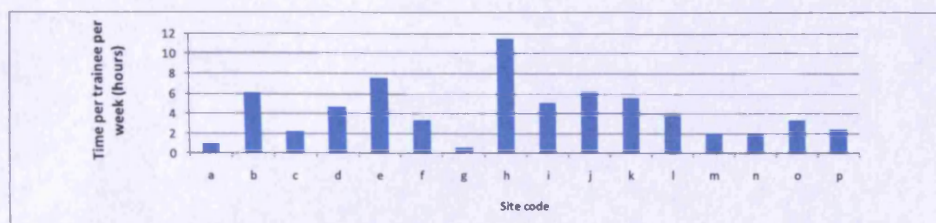
Figure 5.7   Mean time spent on preregistration pharmacist training by RPSGB tutors and managers at each training site (hrs/wk/trainee)

1.3   Preregistration pharmacist trainers

The mean number of trainers (in addition to the RPSGB approved tutors/managers) was 11.6 per site (range 0-22) as shown in Figure 5.8.
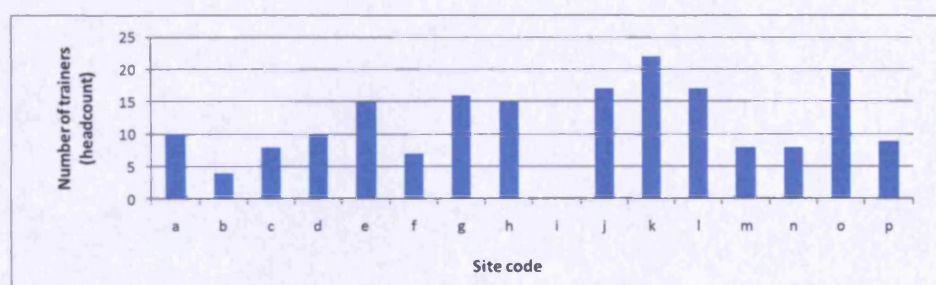
Figure 5.8   Number of preregistration pharmacist trainers at each training site

Preregistration pharmacist trainers were defined as any member of staff, who were not a manager or tutor for the 2008/9 cohort, but had responsibility for a substantive element of the training programme (for example, a rotation through a section or supervision of a one week or more period of ward-based training). It did not include staff who had incidental contact with the trainee, or those who took the trainee for "one-off" visits or tutorials. The case study findings indicated some trainers did not always receive enough information about preregistration pharmacist training to fully understand their role. The information gathered from the questionnaire illustrated that in most sites, there were several trainers who had a role in training, and so this re-enforced the need for good communication with all involved.

Section two: Preregistration pharmacist training practices

2.1   Documents and pre-prepared training materials

All sites had rotas in place that stated where the trainees were based at any particular time. However, the existence of other training documents and pre-prepared materials was found to vary from site to site. Figure 5.9 shows which were used at each site.
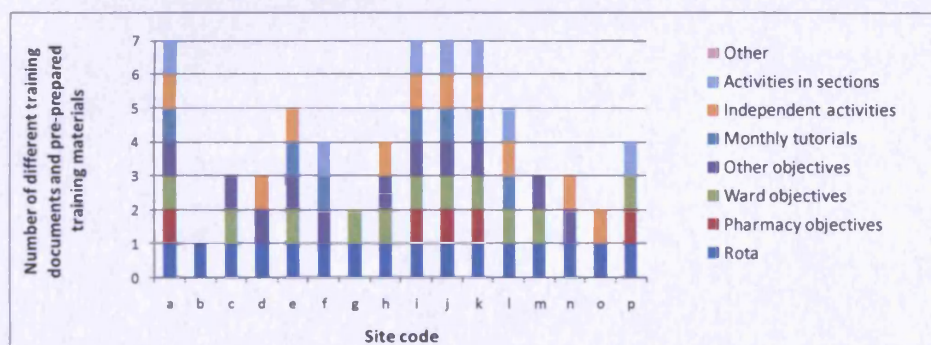
Figure 5.9   Use of documents and other pre-prepared training materials at each training site

Comments received from site "o" indicated that the absence of specific materials was deliberate to encourage the trainees to be self-directed in their learning:

Site o   "Preregs have in-house guidance on objective writing at the beginning of the year. They are expected to write their own learning objectives before each new rotation. These are shown to the tutor for comment and to the trainer prior to or at, the beginning of the rotation. Therefore objectives are set but by each individual student according to their own needs."

Site o   "We have resisted the temptation to run in-house tutorials and concentrate on "on the job" training. Individual trainers may sit down and cover some e.g. counselling scenarios in a tutorial fashion – but this is not the tutor's formal expectation."

There was a wide range of approaches to the level of responsibility that trainees were given. Some tutors appeared to actively encourage the trainees to be responsible for planning their own learning, only providing directed training when requested, whereas other sites controlled the process much more tightly. The case studies had indicated that at sites where tutors and trainers prepared detailed training programmes, more time was spent on training. Trainers who tended to be controlling (152) may have produced

training materials themselves rather than encouraging the trainees to be self-directed by producing them. (151) However, some tutors may have produced materials to save time, particularly if there was more than one trainee at a site.

2.2   The role of the trainee during the preregistration training year

Figure 5.10 illustrates that over the course of the whole year, preregistration trainee pharmacists spent a mean of 36.4% of their time performing roles that were usually performed by pharmacy technicians and 39.1% of their time not contributing to service delivery[73]. Less than a quarter of their time (23.3%) was spent performing the role of a pharmacist. This supports the case study findings that indicated that some trainees spent a large proportion of their time performing the role of pharmacy technicians. Data on which time of year these roles were performed were not gathered but may have provided valuable information about how exposure to different roles developed over time. Regardless of the timing, the fact that less than a quarter of the year was spent undertaking the role of a pharmacist appeared to limit the opportunity for trainees to develop the necessary thinking skills for professional practice.
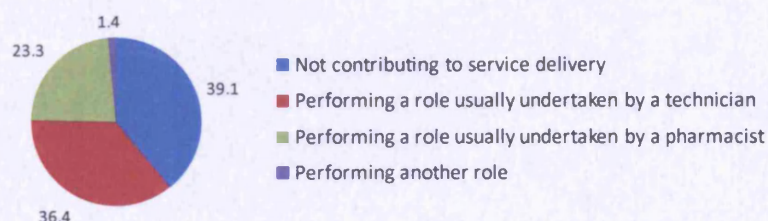
Figure 5.10   Percentage time spent in each role during the whole year

2.3   The role of the trainees in each section of the training programme

Respondents estimated the proportion of time spent by trainees in each role whilst in various sections of the pharmacy. The responses are shown in Figures 5.11a (dispensary), 5.11b (clinical), 5.11c (medicines information), 5.11d (technical services), 5.11e (quality assurance) and 5.11f (stores and purchasing).

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[73] Not contributing to service delivery included activities such as reading, observation of others, shadowing, cross sector experience, simulation, attending courses, tutorials, meetings and assessments.

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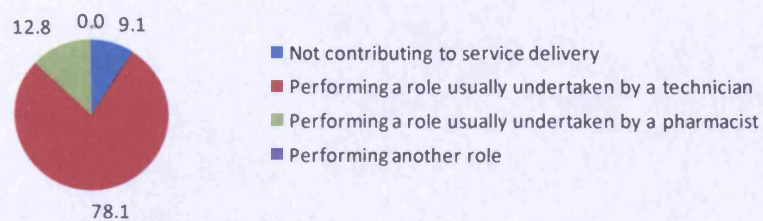
Figure 5.11a   Percentage time spent in each role whilst in the dispensary

Legend:
- Not contributing to service delivery
- Performing a role usually undertaken by a technician
- Performing a role usually undertaken by a pharmacist
- Performing another role
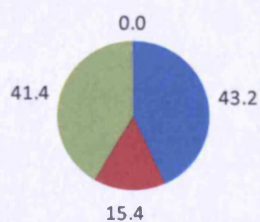
Figure 5.11b
Percentage time spent in each role whilst on ward rotations
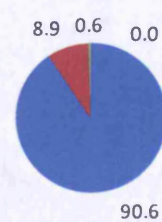
Figure 5.11e
Percentage time spent in each role whilst in quality assurance (n=9)
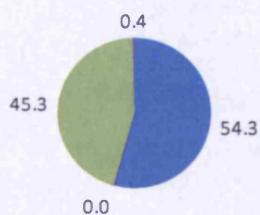
Figure 5.11c
Percentage time spent in each role whilst in medicines information
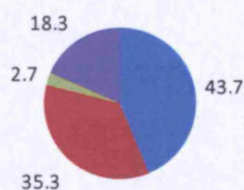
Figure 5.11f
Percentage time spent in each role whilst in stores/purchasing
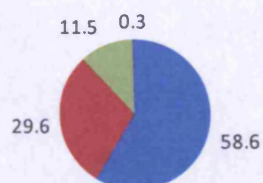
Figure 5.11d
Percentage time spent in each role whilst in technical services

Figure 5.11(a-f) Time spent in each role, by section

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Work undertaken in 2006 and shown in Table 3.12 had gathered data about the duration of time that trainees spent in each section of the pharmacy during the preregistration pharmacist training year. Some rotations, such as stores and quality assurance, were relatively short in duration in comparison with areas such as the dispensary and clinical rotations, which is why the proportion of time spent in each role over the course of the year is different to the proportion of time spent in each role whilst in each section.

It was found that trainees spent the majority of their time performing the role of a pharmacy technician whilst working in the dispensary, as shown in Figure 5.11a. Trainees spent most time performing the role of pharmacists whilst on clinical rotations and in medicines information as shown in Figures 5.11b and 5.11c. Over half of the time that the trainees spent in technical services, medicines information and quality assurance was spent not contributing to any aspect of service delivery. Notably, these were areas that were frequently reported to be training bottlenecks where capacity was a problem. The case studies had highlighted that these specialist areas had particular problems with training capacity because of the complexity of the work and the difficulty in getting trainees to reach a point where they could make a useful contribution to service delivery. Some authors (102, 171) had highlighted the importance of trainees being able to make a meaningful contribution to the work of the service to help them to develop confidence. Training workload may have been reduced if trainees had spent sufficient time in each rotation to be able to perform real work (and so providing some "payback" for the training). Conversely, short duration training rotations may have been suitable if the intention was that the trainee only needed to gain awareness of the work undertaken in the area. Case study evidence had suggested that there was sometimes a lack of clarity about the purpose of rotations in these specialist areas.

2.4 The duration and number of clinical rotations

The pattern of clinical and ward-based training varied considerably between sites as shown in Figure 5.12. At sites a, d, g & i trainees visited wards for 35 weeks or more of the year[74], which suggested that this was a continuous part

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[74] Data on how much time was spent on the wards each day were not collected.

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of the programme, (after annual leave, study leave and cross-sector experience were taken into account). In contrast, trainees at sites f, j, n & p visited wards for less than 20 weeks of their training year. Trainees at five sites (a, b, c, d & g), visited wards for eight or more weeks with their approved tutor. Trainees at all the other sites had relatively limited exposure to their approved tutor in a clinical setting and in two sites (h & m) the approved tutor shared no direct clinical practice with them at all. As Kilminster (155) had highlighted, supervisors needed to be able to observe trainees' practice in order to be able to provide effective feedback and so tutors that accompanied their trainees on ward visits were more likely to be in a position to provide effective feedback.
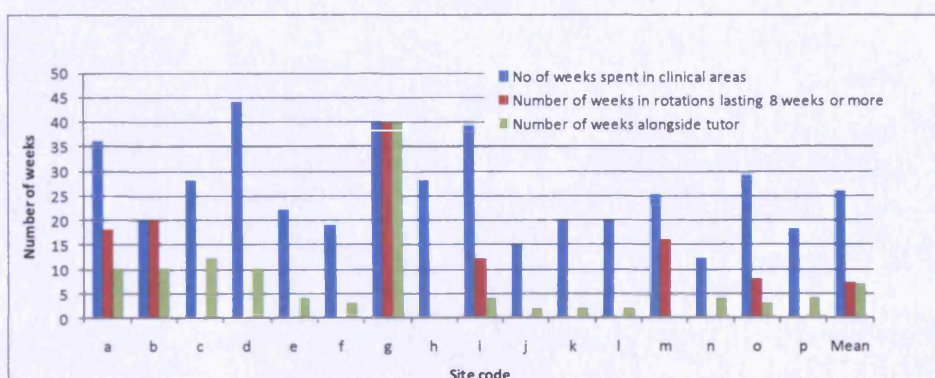
Figure 5.12   Number of weeks spent by trainees on wards and clinics, number of weeks in rotations lasting 8 weeks or more and number of weeks spent with their tutor in clinical areas

The duration of each ward rotation varied between sites. Ten sites reported that their trainees never visited any ward on a regular basis for as long as 8 weeks, three sites reported that their trainees visited one ward regularly for at least 8 weeks and three sites reported that their trainees visited two wards regularly for at least eight weeks each. Some trainees visited as many as 20 wards during their training year as shown in Figure 5.13, which may have helped ensure a varied experience. However, programmes which offered less variety may have been more effective at developing competence. The need for sufficient time in clinical rotations had been identified by several authors as being important for facilitating the development of core skills. (115, 144, 165,

174) Beck recommended that a minimum of four weeks should be spent in clinical areas to build continuity. (165) In this study, the maximum number of weeks that trainees regularly visited any one ward for ranged from 2 to 40 weeks (mean 9.4 weeks).
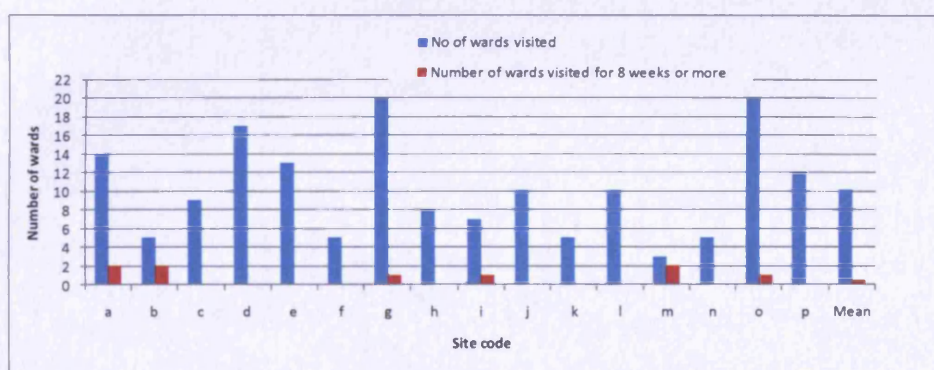
Figure 5.13   Number of wards visited and number of wards visited regularly for 8 weeks or more

2.5   Use of technical accuracy checking training programmes in the 2008/9 cohort

The Preregistration Accuracy Checking Experience (PACE) programme had been developed in spring 2008 by a group of preregistration pharmacist tutors in Wales who had identified that the use of the Accredited Checking Technician (ACT) training programme was not wholly appropriate for preregistration trainee pharmacists.   The PACE programme had been introduced for the 2008/9 cohort of preregistration trainee pharmacists.   By April 2009, all sites were using the new training programme to enable their trainees to become competent to undertake technical accuracy checking.

2.6   Time taken to complete the technical accuracy checking training

The time of year that trainees started and completed the PACE programme was seen to vary, as shown in Figure 5.14. The earliest completion time was one month (January to January).   The longest completion time was nine months (November to July).
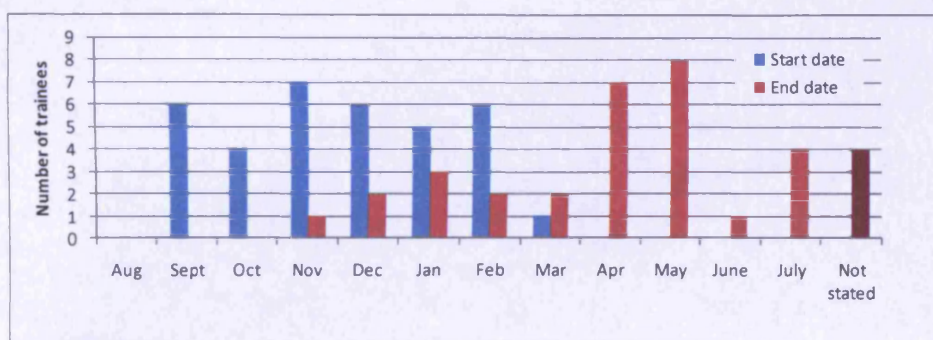
Figure 5.14 Actual (or anticipated) start and finish months for technical accuracy checking programme

In August 2008 it had been found that some preregistration trainee pharmacists in the case study sites had taken several months to complete the technical accuracy checking programme using the original ACT programme. It had been hoped that development of technical accuracy checking competence would have been quicker using the new PACE materials. However, this study discovered that only 29% (10/35) of trainees had completed the technical accuracy checking training by the end of March (two thirds of the way through their training). This may have limited the trainees' opportunities to develop skills and confidence by acting as a technical accuracy checker during their training year, as well as delaying them from moving on to other training and experiences.

2.7 Use of the technical accuracy checking role after completion of the training

Eight sites (50%) reported that their trainees performed (or would perform) the technical accuracy checking role on a daily basis once they were accredited. Six (38%) said they performed checking weekly, one site (6%) said they would never perform the role and one site (6%) did not provide an answer. Seven sites (44%) said their trainees would be placed on the dispensary rota as a checker once accredited, eight sites (50%) said they would not be on a rota and the other site (6%) did not say.

2.8 Clinical appropriateness of items being checked

Respondents estimated that trainees would be challenged about the clinical appropriateness of the items they were checking on a mean of 8% of

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occasions (range 0-25%). This finding was of concern because evidence from the literature had indicated that trainees tended not to think about what they were doing unless they were expected to take responsibility for their actions. (154) The evidence from the questionnaire indicated that trainees rarely had to think about whether a medicine they were dealing with was clinically appropriate.

Section three: Representativeness of case study findings

Issues relating to training capacity

This section of the questionnaire assessed whether or not the case study findings applied to the 16 preregistration pharmacist training sites in Wales. Respondents were asked to indicate their level of agreement, disagreement or otherwise with fourteen statements about issues related to training capacity using Likert scales. The results are shown in Figure 5.15 (a to n).

The responses indicated that nine issues (Figure 5.15a, b, c, d, j, k, l, m & n) were experienced at the majority of sites. Four of these were about problems with resources (bottlenecks (5.15a), time to deliver training (5.15c), access to information and support (5.15m & n)) and four were about difficulties in supporting skills development (5.15b, d, j & k). One was about involvement of other pharmacists in the training (5.15l). However, fewer than half of respondents agreed that five of the issues (5.15e, f, g, h & i) were true at their sites. Four of these issues were about the degree to which there was clarity about the purpose and method of delivery of the training programme (5.15e, f, g & h). The case studies had indicated that some trainers did not fully understand what was expected of them in relation to the preregistration pharmacist training programme. In contrast, the survey (of lead tutors) indicated that the majority of respondents (n=11) thought that there was an in-house consensus about the overall purpose of the training programme (5.15g), although half (n=8) agreed that there was a lack of clarity about some elements of the programme (5.15h) and some (n=6) agreed that some trainers did not know where their contribution fitted into the rest of the training programme (5.15f). Tutors' views about whether preregistration trainee pharmacists took enough responsibility for their own learning (5.15i) were more diverse and may have depended on the individual trainee.

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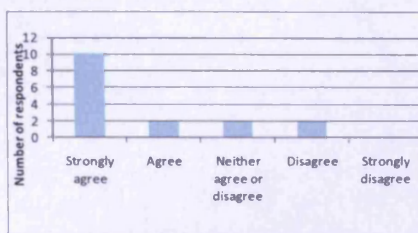
Figure 5.15a   Bottlenecks in the schedule are a problem
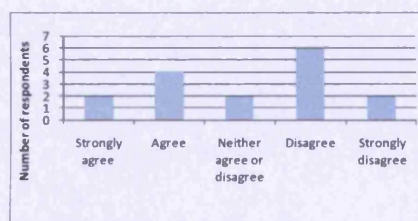
Figure 5.15e   Trainers do not generally discuss preregistration training with their colleagues from other sections
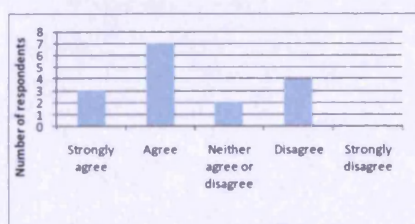
Figure 5.15b   Automation has made it harder for new trainees to find work they can do in the dispensary without disrupting work flow
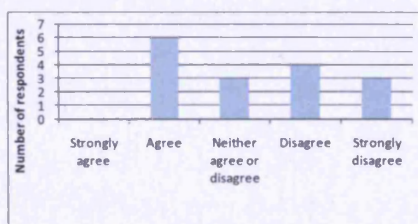
Figure 5.15f   Trainers do NOT know where their contribution fits in with the rest of the preregistration training programme
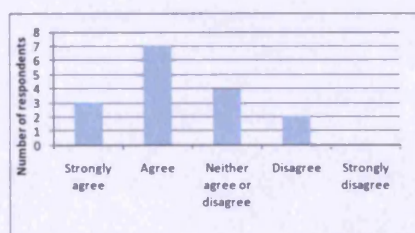
Figure 5.15c   Accredited checking technician (ACT) training takes too long
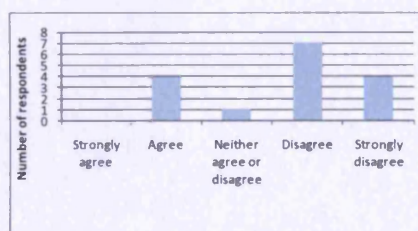
Figure 5.15g   There is NO in-house consensus about the overall purpose of the training programme
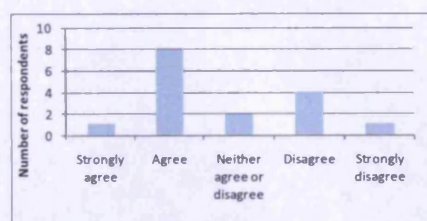
Figure 5.15d   Accredited checking technician (ACT) training is not pitched at the right level for preregistration trainee pharmacists
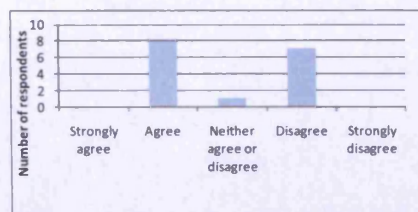
Figure 5.15h   There is a lack of clarity about the purpose of some elements of the training programme

Figure 5.15 (a – h) Tutor opinions about issues relating to training capacity

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Figure 5.15i   Most preregistration
trainee pharmacists do not take enough
responsibility for their own learning
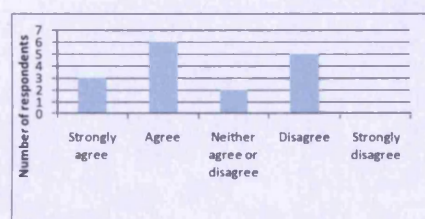
Figure 5.15l   Most pharmacists do
NOT generally get involved in directing
preregistration trainee pharmacists
unless it is specifically their role to do
so
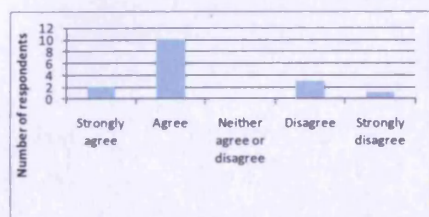
Figure 5.15j   Preregistration trainee
pharmacists generally make the
transition from being a student to being
a professional rather late in the
preregistration training year
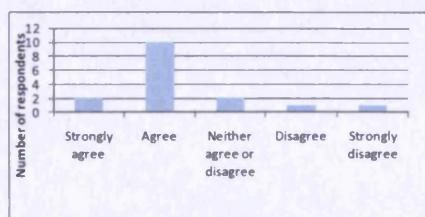
Figure 5.15m   Preregistration
pharmacist tutors do not have enough
information about what training is
happening in other pharmacy
departments in Wales
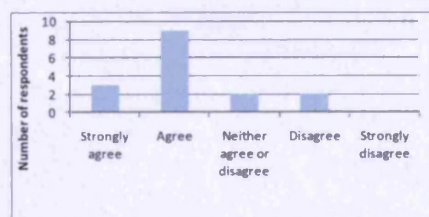
Figure 5.15k   Preregistration trainee
pharmacists struggle to develop the
skills to deal with uncertainty (grey
areas)
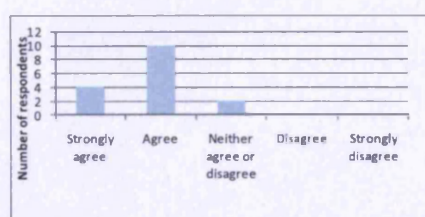
Figure 5.15n   Preregistration
pharmacist tutors would like to have
greater access to shared resources

Figure 5.15 (i - n) Tutor opinions about issues relating to training
capacity

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Generally the respondents agreed with the observations that were related to intrinsic factors that were outside their control. There was more disagreement with statements about extrinsic factors such as content and delivery of the training and communication about the training programme, perhaps reflecting the fact that the respondents may have been responsible for these elements of the programme and the statements contained implied criticism of the practices.

FINALISING RECOMMENDATIONS TO OPTIMISE TRAINING CAPACITY

From this point in the chapter, the results of the questionnaire (Appendix 26), telephone interviews (Appendix 27) and group discussion with the education and training subgroup (Appendix 28) are presented and discussed in order of the provisional recommendations.

Questionnaire

Two sections of the questionnaire gathered information about the provisional recommendations:

Section four: **Recommendations to optimise training capacity**

This section asked respondents to indicate their level of agreement, disagreement or otherwise with each provisional recommendation using a Likert scale. Additional comments were provided by some respondents and are shown in Appendix 29.

Section five: **Assessment of the impact of the recommendations**

This section asked respondents to indicate the extent to which practices decribed in the provisional recommendations had been implemented or if there were plans to implement the practice at their site. Respondents were asked to give their opinion about the likely impact of each of the provisional recommendations on training capacity and quality at their site. This part of the questionnaire was not fully completed by all respondents, which is why in some instances the total number of answers was fewer than 16. There was no option for respondents to indicate "don't know" which may explain the lower completion rate.

One-to-one interviews with respondents

Interviews were held with all respondents who had not agreed with any of the provisional recommendations. In total, fourteen respondents were identified

and interviewed. The respondents were assigned codes (T1–T14) to allow their comments to be displayed whilst retaining anonymity.

Group discussion

Twelve members of the education and training subgroup, including the chair, attended a meeting 9th November 2009 where the recommendations were discussed. The discussion was facilitated by the researcher and lasted 1 hour and 25 minutes. Each recommendation was discussed in turn. Where necessary, further changes to the wording of the recommendations were identified and discussed. Once a consensus opinion about the wording of each recommendation had been agreed, the subgroup was asked to endorse the recommendations for adoption by the Welsh chief pharmacists' committee. The final recommendations are shown in Table 5.2.

Strategies and recommendations

The provisional recommendations were included within three strategies that aimed to optimise training capacity (as shown in Table 4.31, 4.32 and 4.33). These were:

1   Ensure that preregistration trainee pharmacists have appropriate levels of responsibility

2   Ensure that the content and level of preregistration training is appropriate

3   Ensure that effective use is made of existing training resource

Strategy 1: Ensure that preregistration trainee pharmacists have appropriate levels of responsibility

Provisional recommendation 1a

This first recommendation was about the nature of the supervisory relationship between the tutor and trainee. The recommendation stated:

> **"Ensure that the preregistration trainee pharmacists spend a significant amount of time (equivalent to at least two months) working directly alongside their RPSGB tutor in the clinical environment in an apprenticeship-style relationship"**

The number of respondents who agreed and disagreed with the provisional recommendation was evenly divided as shown in Figure 5.16a.
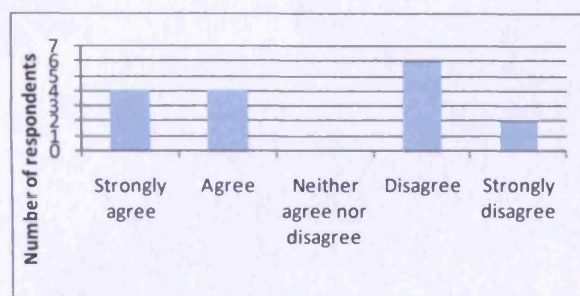
Figure 5.16a Respondents' views about provisional recommendation 1a

A total of eight respondents agreed or strongly agreed with this recommendation; six respondents disagreed with it and two strongly disagreed. This finding was reflected in the number of people who had already implemented, or intended to implement the recommendation as shown in Figure 5.16b.
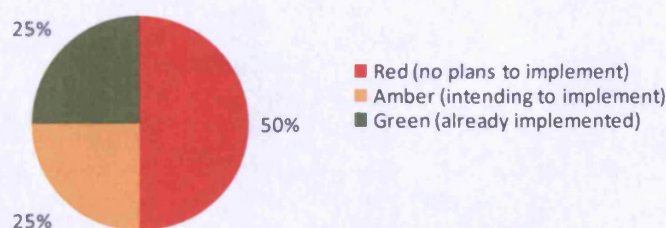
Figure 5.16b Percentage of sites that had already implemented, or intended to implement the practice described in provisional recommendation 1a

On further questioning all of the eight respondents who had disagreed with the recommendation said that they agreed with it in principle, but had concerns about the practical implications. The main issues were whether the tutors would be able to manage the workload if they had more than one trainee and in addition, at some sites the RPSGB approved tutor did not work in a suitable clinical area where a preregistration trainee pharmacist could be trained.

T1   "One person can't do it with both of them."

T3   "The issue is it being the RPSGB tutor."

T3   "I would agree – but being tutored by a pharmacist not necessarily the same one for 2 months."

T4   "I agree in principle with apprenticeship model but two months is a long time – two pharmacists could do it between them."

T7   "I didn't disagree in principle."

T8   "It's not that I disagree with it. In an ideal world, it would be excellent."

T12   "It is fantastic in principle, a one to one apprenticeship, brilliant - but we have clinical specialist tutors, who don't have a clinical base."

Most respondents (n=9) thought implementation of the recommended practice would increase the quality of training but eight thought it would reduce capacity as shown in Figure 5.16c.

Figure 5.16c Opinion of respondents about the impact of provisional recommendation 1a on training quality and capacity

In response to this feedback, the recommendation was revised to be more flexible about who could supervise the trainee whilst recognising that ideally the tutor should perform the role. At some sites with several trainees, two or three tutors had divided the clinical supervision role between them so that they each spent 4 – 6 weeks with each others' trainees. This allowed the trainees to experience different role models as had been recommended by Berger et al, (160) but retained tutoring within a small group, which helped to ensure that trainees could be directly observed by their tutor(s), receive clear feedback and be given appropriate responsibility as had been advocated by Kilminster. (155) Therefore a statement allowing more pharmacists to be involved was added with a proviso about effective handover which reduced the risk of clinical rotations taking place with no progression.

Revised recommendation 1a:

Ensure that the preregistration trainee pharmacists spend a significant amount of time (equivalent to at least 2 hours per day for 8 weeks*) working directly alongside a pharmacist (ideally their RPSGB tutor) in the clinical environment in an apprenticeship-style relationship.

*For the sake of continuity, one pharmacist for an 8 week period is advised. If two pharmacists are used, then it is essential that there is a comprehensive handover of information about trainee progress.

This recommendation achieved the original purpose which was to ensure that trainees had a good supervisory experience as had been described by Kilminster. (155) The amendments allowed more flexibility which meant that it was achievable.

Provisional recommendation 1b

The next recommendation was about use of the technical accuracy checking role after training was completed. The recommendation stated:

"Ensure that once accredited to undertake technical accuracy checking, preregistration trainee pharmacists undertake checking of dispensed items on a regular basis"

The majority of respondents (n=15) agreed with this recommendation as shown in Figure 5.17a. The responses in Figure 5.17b indicated that this was a step that most tutors had already implemented, or were intending to implement.
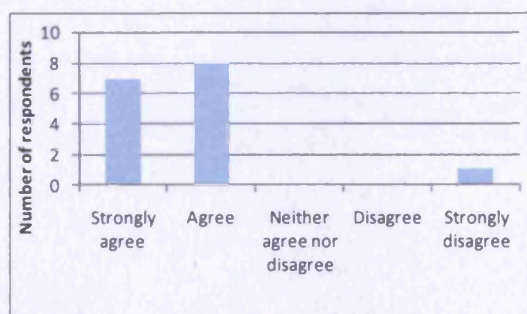
Figure 5.17a Respondents' views about provisional recommendation 1b

Figure 5.17b Percentage of sites that had already implemented, or intended to implement the practice described in provisional recommendation 1b

One respondent strongly disagreed with the recommendation and had no plans to implement it. When questioned about reasons for disagreeing with the recommendation, the respondent said that their views about this recommendation were based on an assumption that this was an attempt to try to use the trainees as a pair of hands in the dispensary. This reaction was similar to one observed by Derrick (102) who had identified that junior doctors did not value the time that they spent contributing to service as being valuable to their training. On further discussion with the respondent they stated that they now understood the reason for the recommendation and now agreed with it. The recommendation was left unchanged.

The majority of respondents (n=10) reported that they thought the recommendation would improve quality, but only four thought it would improve capacity as indicated in Figure 5.17c. Several respondents thought it would have no impact on capacity (n=7) or quality (n=3), presumably because it was already in use at the majority (69%) of sites.
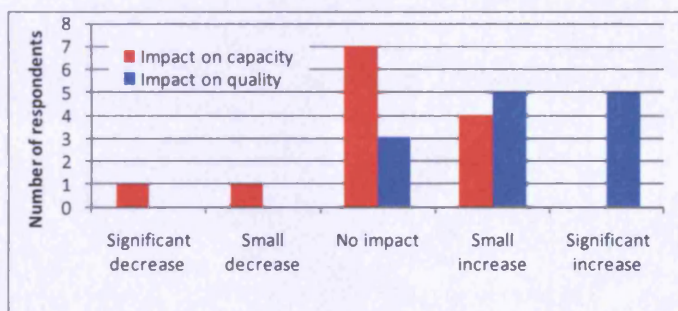
Figure 5.17c Opinion of respondents about the impact of provisional recommendation 1b on training quality and capacity

This recommendation would increase trainees' opportunities to take personal responsibility for work which had a direct impact on patient care. Evidence from the case studies and the literature had indicated that until trainees accepted personal responsibility they did not think or behave in the way that a professional with that level of responsibility would. (154)

Provisional recommendation 1c

The next recommendation was about how trainees were coached and questioned by those around them. The original recommendation stated:

"Ensure that preregistration trainee pharmacists are regularly coached and challenged by pharmacists about the appropriateness of the medicines that they are checking"

This recommendation had been developed because evidence from the case studies had indicated that when some trainees were gathering evidence of technical accuracy checking competence, they did not think about whether the medicines that were clinically appropriate. Trainees were said to be "thinking like a technician, not a pharmacist". It was also found that some pharmacy staff did not know how to support trainees that they were working alongside. Evidence from the literature had highlighted the importance of ensuring that trainees had access to a number of role models and that involvement of more people may increase placement capacity. (158, 160, 161) If trainees were questioned regularly by different people, it may encourage them to think more deeply about what they were doing.

The majority of respondents (n=14) agreed with this recommendation as shown in Figure 5.18a. One respondent had disagreed with this recommendation and a second had neither agreed nor disagreed with it. The majority of respondents had already implemented the recommended practice, or were intending to, as shown in Figure 5.18b.
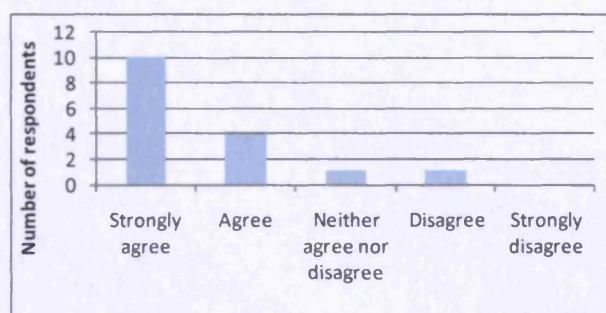
Figure 5.18a Respondents' views about provisional recommendation 1c

Red (no plans to implement)
Amber (intending to implement)
Green (already implemented)
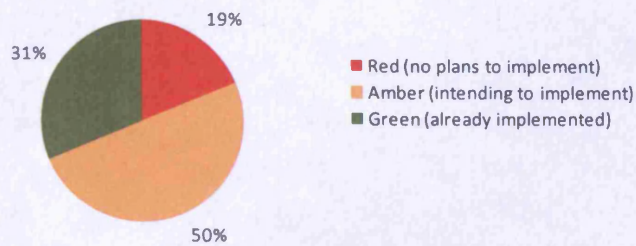
Figure 5.18b Percentage of sites that had already implemented, or intended to implement the practice described in provisional recommendation 1c

The respondent who disagreed with the recommendation had assumed that it only related to the dispensary setting, where there were very few pharmacists and those that were checking were isolated from the dispensing process. The second respondent who had neither agreed nor disagreed felt that it would not improve capacity, but may improve quality.

T3   "Pharmacists who do checks in the dispensary are in isolated checking boxes."

T7   "I agree with the principle, but the dispensary is run by technicians – so there is little contact with pharmacists whilst doing the technical check."

T7   "This doesn't affect capacity – it is a quality issue. I agree with the principle."

Most respondents thought that the use of the recommendation would improve quality of training and either improve or have no impact on capacity. Two respondents felt it could reduce capacity as shown in Figure 5.18c.
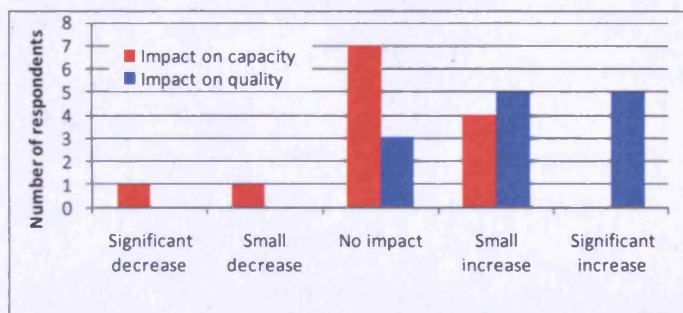
Figure 5.18c Opinion of respondents about the impact of provisional recommendation 1c on training quality and capacity

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On discussion of this recommendation at the education and training subgroup meeting it was apparent that the wording did not convey the reasons why this recommendation had been developed. The recommendation was changed to indicate that all staff should be encouraged to coach and challenge trainees.

Revised Recommendation 1c

Ensure that the culture of the department is such that every member of staff is aware that it is their role to challenge and question preregistration trainee pharmacists about the medicines that they are checking.

This recommendation aimed to ensure that trainees were encouraged to think about what they were doing at all times, regardless of where they were working, or who they were working alongside.

Provisional recommendation 1d

The next recommendation was about increasing the time that the trainees spent performing pharmacists' roles. The original recommendation stated:

> **"Maximise the number and/or duration of rotations that provide opportunities for trainees to spend time practicing roles usually undertaken by a pharmacist"**

The majority of respondents (n=13) were in favour of this recommendation as shown in Figure 5.19a. All except one site had already implemented this practice or intended to do so as shown in Figure 5.19b. The majority of respondents (n=10) thought it would have a positive impact on quality, but only two thought it may have a slight impact on capacity as indicated in Figure 5.19c.
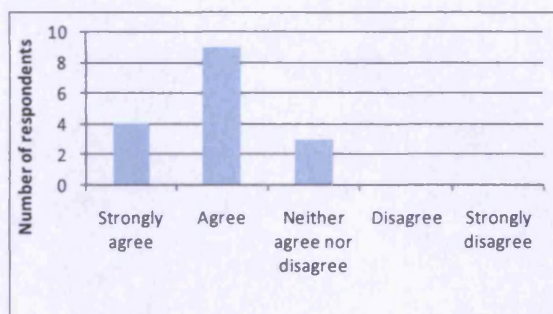
Figure 5.19a Respondents' views about provisional recommendation 1d
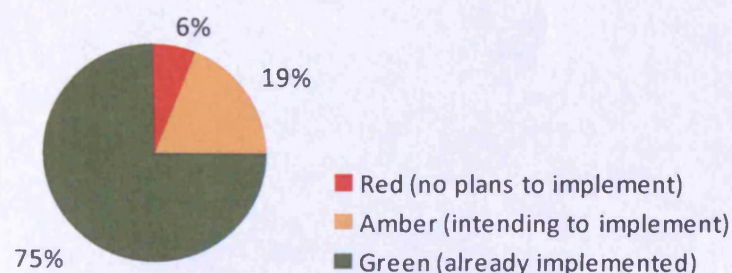
Figure 5.19b Percentage of sites that had already implemented, or intended to implement the practice described in provisional recommendation 1d
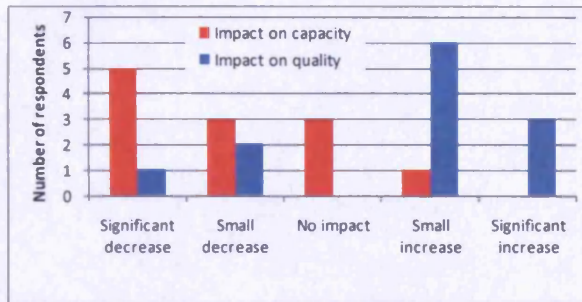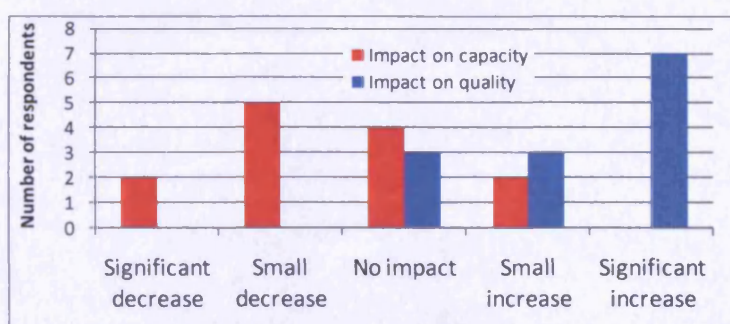

Figure 5.19c Opinion of respondents about the impact of provisional recommendation 1d on training quality and capacity

On questionning, the respondents had "neither agreed nor disagreed" with the original recommendation (n=3) it was apparent that they were unclear about the reasons for the recommendation and did not feel that it added anything to the practice at their sites.

T1   "I was not sure what the recommendation was referring to."

T5   "We already do it so doesn't add anything to our practice."

T10 "They should still do some things that are not done by pharmacists – as they need to understand it."

However, on further discussion respondents agreed that it was useful to stipulate that a certain proportion of time should be spent performing the role of pharmacists.

T1   "They shouldn't spend a lot of time doing technician jobs on a regular basis. I can't put figure on it . . . by the last 3 months of the year they should be spending at least 70% of time undertaking roles performed by a pharmacist"

T5   "We don't want them to be working as a technician or being lectured to"

The recommendation was amended to make it measurable and to clarify that trainees should spend a proportion (but not all) of their time undertaking roles that were performed by pharmacists. Views varied amongst the three respondents about what the percentage of time should be. A figure of 50% was suggested although it was noted that this figure needed further consideration by the wider group of respondents.

At the education and training subgroup, further discussion resulted in the recommendation being revised to indicate that there should be progression and that towards the end of the training period, trainees should be spending the majority of their time working in roles that pharmacists performed.

Revised recommendation 1d:

Ensure that by the 10th month of the training year, preregistration trainee pharmacists undertake a minimum of 75% of their time performing roles undertaken by a pharmacist (under appropriate supervision).

This recommendation aimed to ensure that trainees were performing roles that would help develop their professional competence and confidence, particularly as they approached registration.

Strategy 2:   **Ensure that the content and level of preregistration training is appropriate**

Provisional recommendation 2a

The first recommendation in this strategy was about the Preregistration Accuracy Checking Experience (PACE) programme. The recommendation stated:

> **"Ensure that the trainees undertake the Preregistration Accuracy Checking Experience (PACE) training programme"**

All respondents agreed with the provisional recommendation as shown in Figure 5.20a. As Figure 5.20b indicates, by the time of the questionnaire distribution, all sites had implemented the new PACE training programme as shown in Figure 5.20b. The PACE programme was designed to help preregistration trainee pharmacists to reflect on any errors that they made and identify how they would avoid them in the future. This was a change from the approach in the ACT programme where evidence was collected and the process was simply repeated if errors were made. Snadden (176) had criticised competency-based assessments because they sometimes measured things that were simple to measure (for example, errors), rather than measuring more meaningful indicators of competence (such as recognition of one's own limitations or failings). The PACE programme appeared to attempt to address that problem.
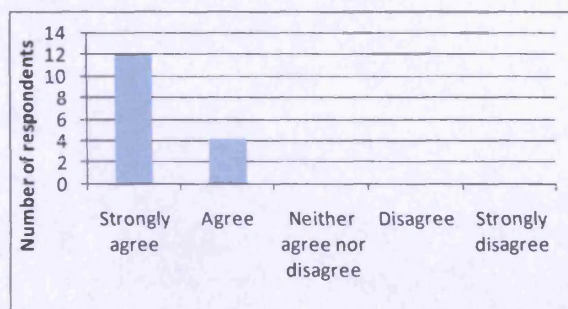
Figure 5.20a Respondents' views about provisional recommendation 2a

0%   0%

■ Red (no plans to implement)
■ Amber (intending to implement)
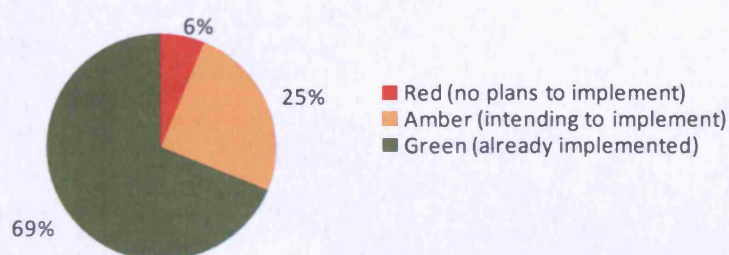■ Green (already implemented)

100%
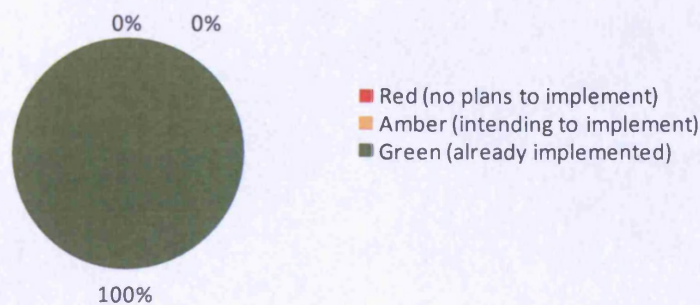
Figure 5.20b Percentage of sites that had already implemented, or intended to implement the practice described in provisional recommendation 2a

The views about the impact of the recommendation are shown in Figure 5.20c. Half of repondents (n=8) thought that implementation of the recommendation would have no impact on training capacity. The reason for this may have been that as the practice was already in place, there would be no further change. However, eight respondents also thought that the use of the programme would have a positive impact on the quality of training.
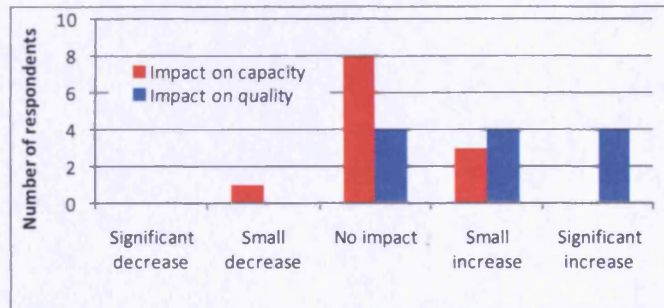
Figure 5.20c Opinion of respondents about the impact of provisional recommendation 2a on training quality and capacity

A discussion about the recommendation at the meeting of the education and training subgroup indicated whilst all sites were in favour of the recommendation, as all training sites had now adopted the PACE progrmme, the recomendation was obsolete and could be removed from the strategy[75].

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[75] Recommendations (2b-2e) were renumbered (2a–2d).

Provisional recommendation 2b

The next recommendation was about the timescale for completion of the Preregistration Accuracy Checking Experience (PACE) programme. The recommendation stated:

> **"Aim to complete the Preregistration Accuracy Checking Experience (PACE) training programme within the first four months of the year"**

The majority of respondents (n=9) disagreed with this recommendation as shown in Figure 5.21a. Only one site (6%) had completed the PACE training within this timescale for the current cohort of trainees as shown in Figure 5.21b although four other sites (25%) intended to implement this in the future.

Figure 5.21a Respondents' views about provisional recommendation 2b

Figure 5.21b Percentage of sites that had already implemented, or intended to implement the practice described in provisional recommendation 2b

The interviews with those who disagreed with the recommendation indicated that their main concern was the timescale for completion. Respondents agreed that there should be a deadline for completion of the programme but that four months was not enough time, particularly if there were several trainees at the site. Opinions about the impact that the recommendation

would have on training quality and capacity were very mixed as indicated in Figure 5.21c.
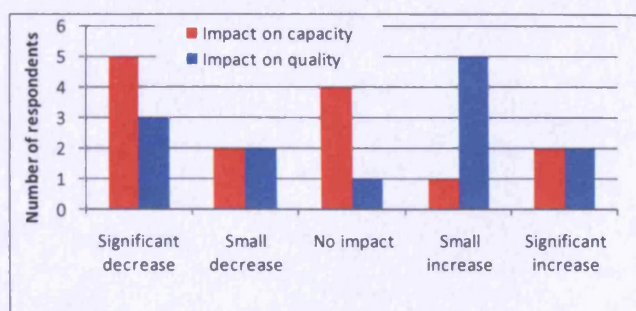
Figure 5.21c Opinion of respondents about the impact of provisional recommendation 2b on training quality and capacity

After completing the questionnaire, several respondents had attended a meeting where data about experience of using the PACE was presented. These data had demonstrated that completion of the PACE training was achievable in four months and that there were benefits in doing this. As a result, by the time of the interviews, several respondents had already changed their mind about the recommendation and were more willing to agree to it.

T8   "My opinion is changing and I'm going to try it this year. At the tutor training day I heard a presentation that PACE allowed trainees to use skills – and made them dispense better."

The interviews did reveal a practical problem in sites with several trainees. If they were not scheduled to be in the dispensary in the first few months of the year, they would not be able to complete the PACE programme in this timescale.

T10   "At sites with more than one trainee, it is not possible for all of them to be in the dispensary all at once."

T2   "It would be nice if you could, but logistically it is impossible. Within x months of starting it would be better if staggering bigger numbers of trainees."

T1   "It's good to have a target date, but I would change it to the end of December."

T9   "They should do PACE and there should be a target – most places should complete in 6 months."

In recognition of this fact, the recommendation was revised to allow the start date of the PACE training to be staggered. This meant that trainees who were not scheduled to be in the dispensary until later in the year would have the same amount of time to complete the training as those who started earlier. This was perceived as being fairer to the trainees and provided useful

flexibility for sites with more than one trainee. During the group discussion it was suggested that that the actual time spent working on the PACE programme could be reduced to 3 months. The general view was that this experience should be gained in the first half of the training year. The recommendation was revised to take into account these amendments.

Revised Recommendation 2b (became 2a in final document):

Introduce PACE in the first 5 months of the training year and aim for each individual preregistration trainee pharmacist to gain accreditation within a 3 month period of evidence collection.

*The 3 month period of evidence collection is normally expected to be consecutive but this does not necessarily have to be the case if trainees' rotas do not allow it

This recommendation addressed one of the issues that had been identified in the case studies that preregistration trainee pharmacists spent a long time in the dispensary gathering evidence of technical competence. Implementation of this recommendation would allow trainees to complete their basic technical training earlier in the year and progress to more appropriate work with more responsibility which would help them to develop confidence. Berger had identified that it was important for trainees to work independently and accept responsibility in order to develop self-confidence. (160) Giving trainees more responsibility had also been noted to relieve training capacity as they could make more of a contribution to service delivery. (172, 173)

Provisional recommendation 2c

The next recommendation was about reducing time that the trainees spent in non-participatory roles. The original recommendation stated:

> **"Minimise the number and/or the duration of rotations undertaken by preregistration trainee pharmacists where they are NOT able to perform a hands-on role"**

The need for this recommendation was identified from the case study evidence. Trainees spent several weeks in some rotations that were so specialised that they were not allowed to do any work in the area. They had described feeling "in the way" at busy times, and some felt that their time had been wasted. Trainers in the specialist areas generally complained that a high training workload prevented them from spending enough time with the trainees to get them to a point of being able to contribute. It appeared that the

apparent aim of the training (to provide awareness of the area to encourage future interest) and the actual training practice (provide intensive training to develop basic competence levels) were not aligned.

Evidence from the literature had identified that trainees benefitted from being able to contribute to the work of the service, even if this was at a relatively basic level. (171)   This provided them with a level of "currency" in the workplace. It had been noted that trainees were more likely to be a training burden if they were continually in short placements where they were trained and then moved on before being able to contribute to service delivery. (108) The recommendation aimed to clarify the purpose of the rotations which would inform decisions about the appropriate duration of exposure to the area.

The majority of respondents (n=9) agreed with this recommendation as indicated in Figure 5.22a.   The majority of sites (n=9) had already implemented this as shown in Figure 5.22b.
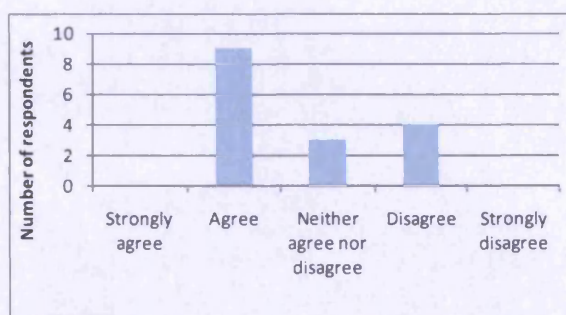
Figure 5.22a Respondents' views about provisional recommendation 2c
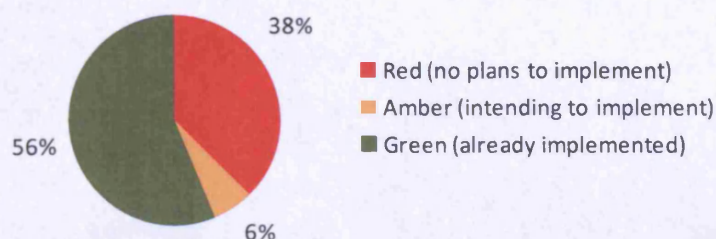
Figure 5.22b Percentage of sites that had already implemented, or intended to implement the practice described in provisional recommendation 2c

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Some respondents (n=6) felt that this recommendation would improve quality, but the majority (n=12) thought that it would have no, or a negative impact on capacity as shown in Figure 5.22c.
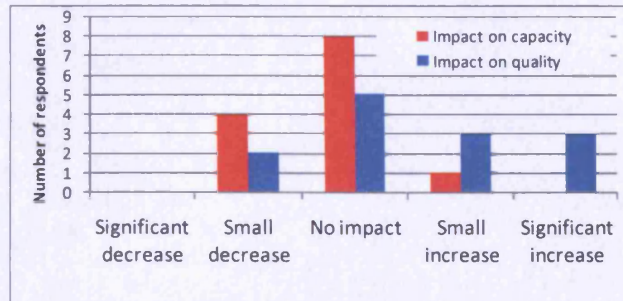
Figure 5.22c Opinion of respondents about the impact of provisional recommendation 2c on training quality and capacity

Four respondents had disagreed with this recommendation and three had neither agreed nor disagreed with it. On discussion with the respondents, it became apparent that the wording of the recommendation was unclear. The word "minimise" was not measurable. Similarly – it was not clear what types of practices "not able to perform a hands-on role" referred to. For example, some respondents had thought this would lead to a reduction in the time spent in clinical areas, because the trainees were legally unable to perform professional checking. The respondents agreed that rotations where the trainee was not able to contribute any work should be relatively short and infrequent, although some variety was useful for interest and exposure to certain specialisms.

T11 "I was not sure about what the recommendation was saying."

T1 "Rotations where they are only observing should be one week max."

T5 "In some areas, a couple of days is more than enough to grasp the basic principles."

T9 "We may not attract people if the preregistration year is not varied."

The recommendation was revised to make the timescale measureable and a definition for "not performing a hands-on role" was proposed.

Revised recommendation 2c (became 2b in final document)

Limit periods undertaken by the preregistration trainee pharmacists where they do not perform a hands-on role* to a maximum of two weeks of in-house pharmacy rotations plus a total of 20 sessions (10 days) of short visits to specialist or non-pharmacy settings.

*"Not performing a hands-on role" means rotations or short visits where the trainees' activities do not contribute directly or indirectly to patient care (e.g. observation, shadowing, reading and/or simulation exercises). Rotations where the trainee undertakes these activities during an introductory period prior to undertaking a hands-on role (under appropriate supervision) are excluded from this recommendation.

This recommendation would make it possible for trainees to have short (and potentially more interesting) rotations in specialist areas where they were not expected to develop competence. If competence were expected, then longer training could be provided to enable trainees to reach a point where they could use their new skills.

Provisional recommendation 2d

The next recommendation was about ensuring that the training was generalist, not specialist. The original recommendation stated:

"**Ensure that the bulk of preregistration pharmacist training is undertaken in generalist areas.**"

All respondents agreed with this recommendation as shown in Figure 5.23a. All sites either already did this or were planning to implement it, as shown in Figure 5.23b.
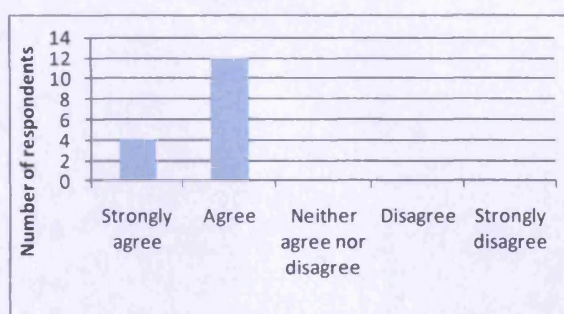

Figure 5.23a Respondents' views about provisional recommendation 2d
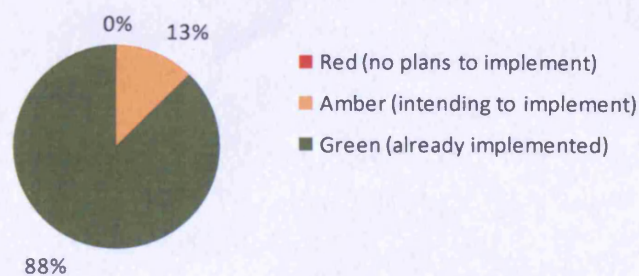
Figure 5.23b Percentage of sites that had already implemented, or intended to implement the practice described in provisional recommendation 2d

The majority of respondents (n=10) thought that the recommendation would have no impact on capacity but seven thought it would improve quality as shown in Figure 5.23c.
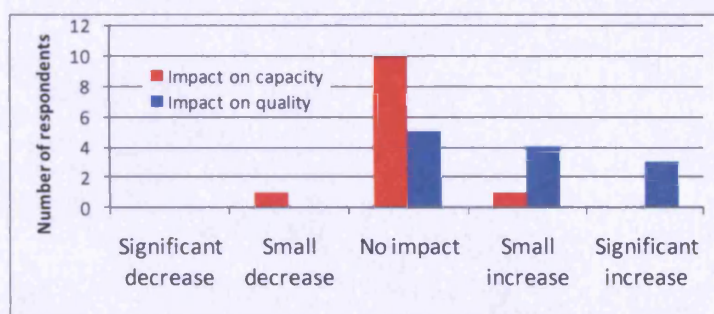
Figure 5.23c Opinion of respondents about the impact of provisional recommendation 2d on training quality and capacity

This recommendation was aimed at ensuring that the trainees focussed on developing skills, rather than specialist clinical knowledge. The recommendation was left unchanged but became 2c in the final document.

Provisional recommendation 2e

The next recommendation was about ensuring that the training was of a suitable level for the trainees. The original recommendation stated:

"**Ensure that preregistration pharmacist training is pitched at a level that is appropriate to the skills and experience of the trainees.**"

Raehl & Bond (143) had identified that training should be focussed on core skills rather than specialist knowledge as this can be gained later. All

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respondents except one were in favour of this recommendation. One person neither agreed nor disagreed as can be seen in Figure 5.24a. All sites stated that they had already implemented this or intended to implement it as shown in Figure 5.24b. However, there was contradictory evidence from the other parts of the questionnaire that suggested that the training was not always pitched at the right level. For example, it was apparent that some trainees were spending the majority of their time performing the role of a pharmacy technician and taking most of the year to complete their technical accuracy checking training. Also, some trainees were being trained using materials and approaches that had been designed to be used with diploma pharmacists.
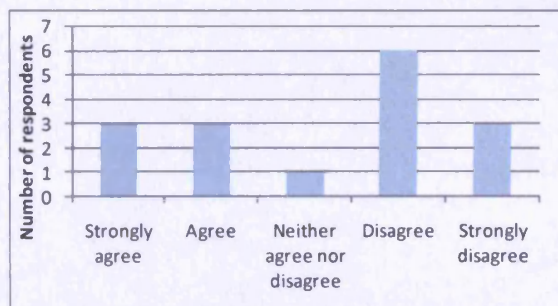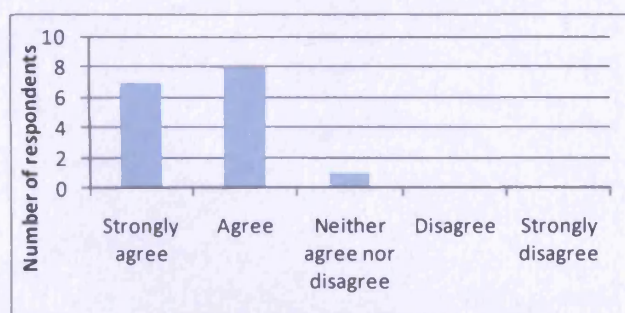

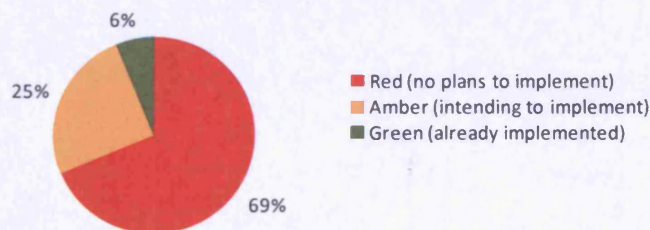**Figure 5.24a Respondents' views about provisional recommendation 2e**
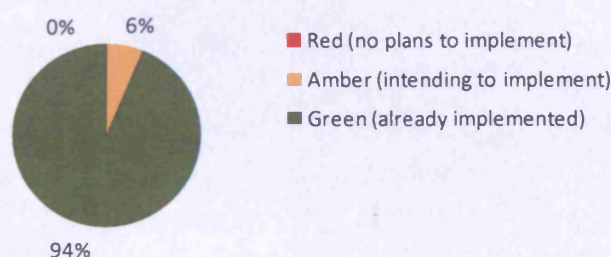
Figure 5.24b Percentage of sites that had already implemented, or intended to implement the practice described in provisional recommendation 2e

Seven respondents thought that the recommendation would improve quality, but most thought it would have no impact on capacity as shown in Figure 5.25c.
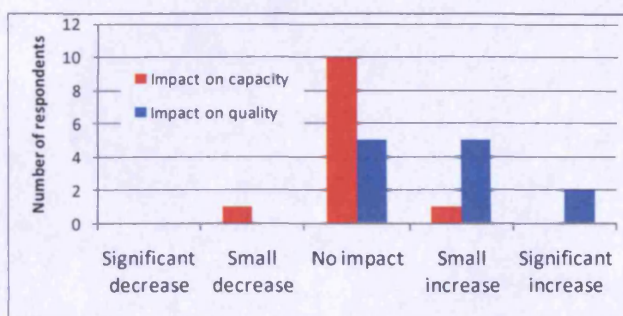
Figure 5.24c Opinion of respondents about the impact of provisional recommendation 2e on training quality and capacity

The respondent that had "neither agreed nor disagreed" with this provisional recommendation said that while they agreed with the statement, they were not aware of a need for it. The reason of the provisional recommendation had been because the case study evidence had indicated that some trainers did not differentiate between different trainees and so the preregistration pharmacist training may not always be appropriate for their stage of training. Once this had been explained, the respondent agreed that some training was too clinically advanced. They subsequently agreed with the recommendation.

T8 "Some trainers are doing diploma and prereg training and do not differentiate between the two."

The original wording implied that the level was dictated by the current skills and experience of the trainees, rather than what they should be aiming for. The recommendation was altered to clarify that the training should be pitched at an appropriate level for newly qualified pharmacists.

Revised recommendation 2e (became 2d in the final document)

Ensure that preregistration pharmacist training is focused on skills development and is pitched at an appropriate level for newly qualified pharmacists.

This recommendation aimed to ensure that trainers made a distinction between the needs of different types of trainees. Preregistration trainee pharmacists needed the opportunity to become competent at core skills such as medication history taking and patient counselling, rather than focusing too much on the roles of pharmacy technicians or providing in-depth knowledge of clinical areas which would be covered in training programmes aimed at qualified pharmacists.

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Strategy 3   Ensure that effective use is made of existing training resource

Provisional recommendation 3a

The first recommendation in this strategy was about being clear about the purpose of training. The original recommendation stated:

"Ensure that the purpose of each rotation that the trainee undertakes is made explicit"

All respondents agreed with this recommendation as shown in Figure 5.25a. All except one of the respondents had already implemented the recommended practice, or intended to, as shown in Figure 5.25b.
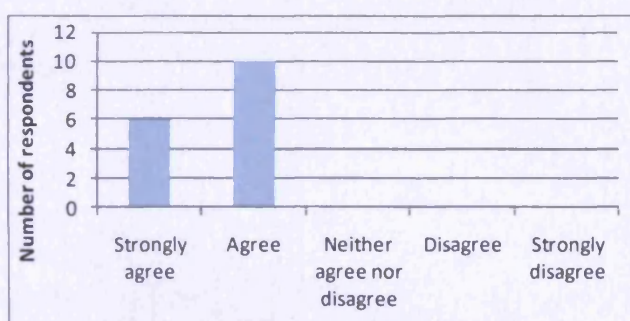
Figure 5.25a Respondents' views about provisional recommendation 3a
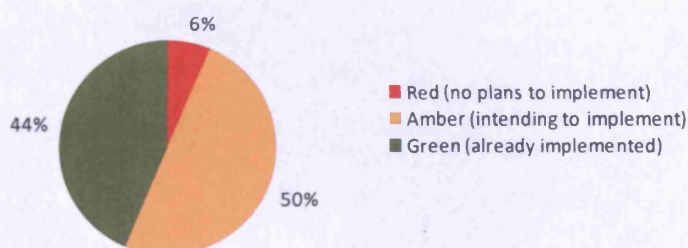
Figure 5.25b Percentage of sites that had already implemented, or intended to implement the practice described in provisional recommendation 3a

The majority of respondents (n=9) thought that this recommendation would improve quality but most thought it would have no impact on capacity (n=10) as shown in Figure 5.26c.
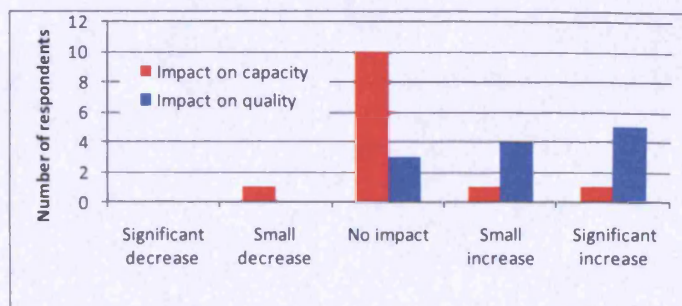
Figure 5.25c Opinion of respondents about the impact of provisional recommendation 3a on training quality and capacity

The respondents were of the view that this recommendation was already being achieved in their sites although contradictory evidence was found during the case studies which had illustrated that trainers were not aware of the purpose of their contribution to preregistration pharmacist training. This recommendation was aimed at addressing that point. The recommendation was left unchanged.

Provisional recommendation 3b

The next recommendation was about communication with trainers. The original recommendation stated:

> "Hold a regular annual meeting with trainers from all sections to ensure that the aims and delivery of preregistration pharmacist training are aligned across the organization"

Twelve respondents were in favour of this recommendation and two neither agreed nor disagreed as shown in Figure 5.26a. Five sites had already implemented this, and a further nine intended to, as indicated in Figure 5.26b.
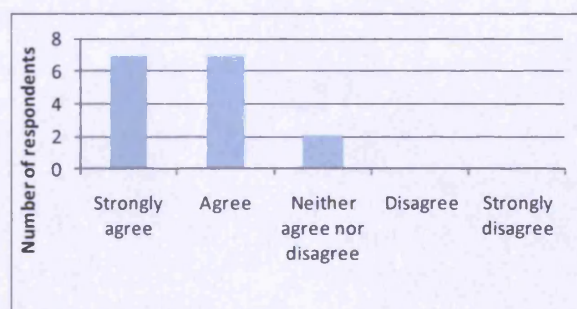
Figure 5.26a Respondents' views about provisional recommendation 3b

215

13%

31%

56%

■ Red (no plans to implement)

■ Amber (intending to implement)

■ Green (already implemented)
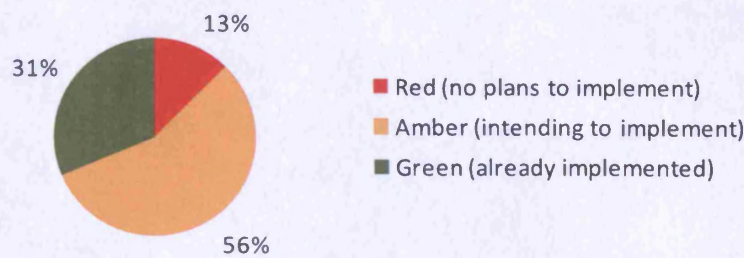
Figure 5.26b Percentage of sites that had already implemented, or intended to implement the practice described in provisional recommendation 3b

The need for this recommendation had been identified from the case study evidence where it was apparent that some trainers were not fully aware of how their contribution fitted with the whole programme. Brown et al (162) had recognised that some trainers were not fully aware of their role in medical training, and as the case studies had suggested that there were similar issues in pharmacy. All respondents agreed that implementation of this practice would lead to an improvement in quality of training, but only two thought that it would improve training capacity as shown in Figure 5.26c.
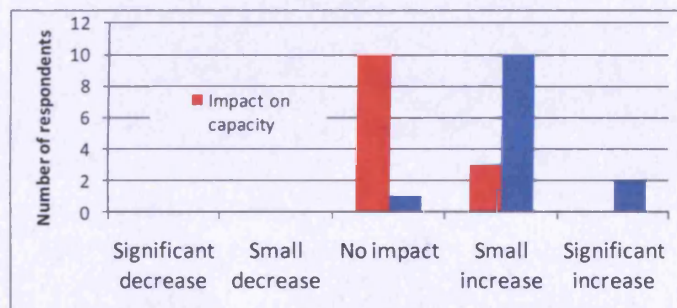
Figure 5.26c Opinion of respondents about the impact of provisional recommendation 3b on training quality and capacity

The two respondents who had neither agreed nor disagreed with the provisional recommendation said that they agreed with the recommendation in principle, but at their sites it was difficult to arrange meetings that trainers from all sections could attend because they worked at different sites.

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T1   "We do try and do if they are off site – e.g. MI, aseptics, we chat to them on the phone."

T14   "We have meetings, but not with all trainers. The minutes are cascaded."

Both respondents agreed that the recommendation was better practice and so the recommendation was left unchanged.

Provisional recommendation 3c

The next recommendation was about sharing of materials with other sites. The original recommendation stated:

> **"Using existing resource and expertise where possible, collaborate between sites to build shared access to a programme of video-conferenced tutorials"**

It had been apparent whilst conducting the case studies that a lot of time and effort was spent in developing training materials for small numbers of trainees at each hospital site. This recommendation was intended to improve tutors' knowledge about the training at other sites and ultimately develop a culture where materials could be shared. This could help to reduce training workload whilst improving quality.

Half of the respondents (n=8) agreed with this recommendation and 6 neither agreed nor disagreed with it as shown in Figure 5.27a. Three respondents had already implemented this, and seven said they intended to implement the recommendation as shown in Figure 5.27b.
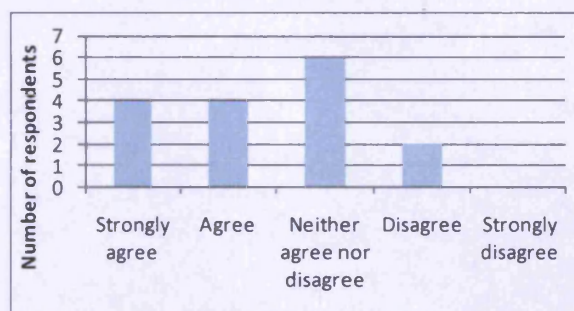

Figure 5.27a Respondents' views about provisional recommendation 3c
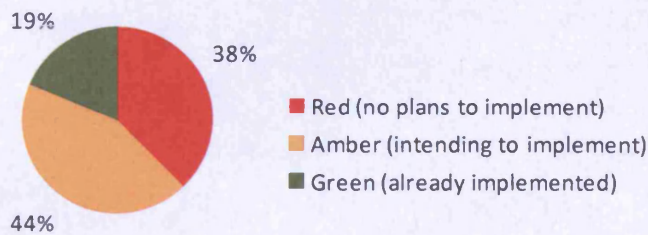
Figure 5.27b Percentage of sites that had already implemented, or intended to implement the practice described in provisional recommendation 3c

The majority of respondents (n=13) thought that the recommendation would lead to improvements in training quality and six thought that it would help with capacity. Nine others thought that it would have no impact on capacity as shown in Figure 5.27c. One respondent who disagreed said that they had done so because they already had a programme of tutorials set up for their trainees. Another was sceptical about the use of video-conferencing based on their experience of using it.

T11   "I disagreed because we have tutorials that are set up."

T11   "Videoconferencing may work if it worked properly."

T13   "We have tried video-conferencing and it doesn't work very well. It is really difficult to get a feel for what's going on at the other end."
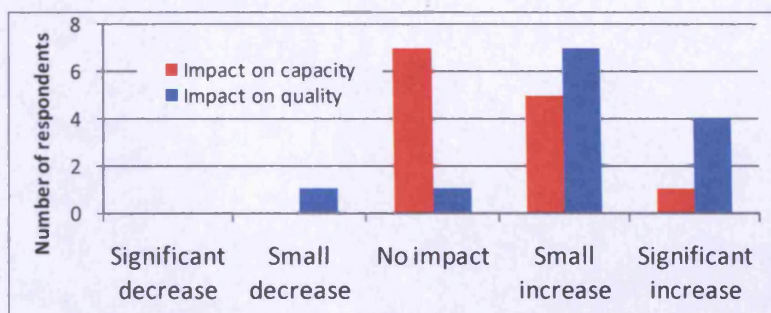
Figure 5.27c Opinion of respondents about the impact of provisional recommendation 3c on training quality and capacity

Some respondents had tutorial programmes set up and could see the benefit to other sites of being able to access their materials, but did not expect to derive much benefit themselves. Respondents who did not already run tutorial programmes recognised that there may be benefits to them being able to access materials from other sites, but were concerned about having to produce other training materials in return.

T13   "If x were running a tutorial, and had facilities to let my trainees view it, that would be perfect."

Generally, the respondents were not convinced of the benefits of using video-conferencing and wanted to take a more measured approach to identify what tutorial materials existed, prior to deciding whether and how to share them. The recommendation was changed to reflect that stance.

Revised recommendation 3c:

Develop an All-Wales database of in-house tutorials where training materials have been prepared and may be suitable for delivery at other sites. Investigate methods of facilitating access to the materials in manner that is efficient, equitable, ensures that the materials remain up to date and gives full recognition to the authors of the original work.

Provisional recommendation 3d

The final recommendation was about use of information technology. The original recommendation stated:

"Use simulation software and computer assisted learning (CAL) packages to provide resources that facilitate training and assessment of key skills and competencies."

The majority of respondents (n=13) were in favour of this recommendation, two neither agreed nor disagreed, and one strongly disagreed as shown in Figure 5.28a. Four respondents had already implemented this and eight intended to implement the practice as shown in Figure 5.28b.

This recommendation was in response to the fact that some sections of the pharmacy had successive trainees (not just preregistration trainee pharmacists, but pharmacy technicians and new staff) who all needed the same basic training (for example on how to produce dispensing labels). In most sites, these trainees were all told the same information by a person who

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spent time in a one-to-one training role. If this training could be provided using video, computer simulation or other training technologies, it could free up the time that the member of qualified staff spent on training.
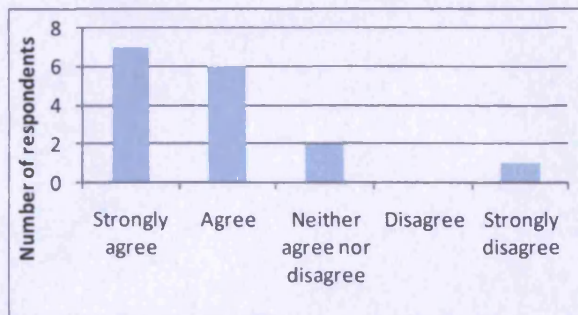

Figure 5.28a Respondents' views about provisional recommendation 3d
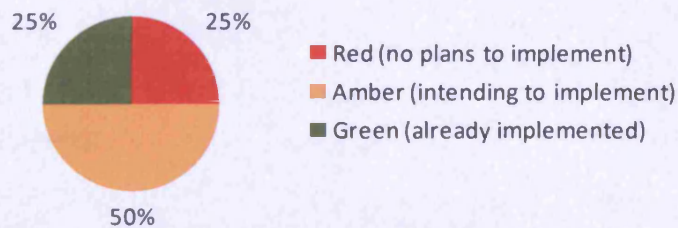
Figure 5.28b Percentage of sites that had already implemented, or intended to implement the practice described in provisional recommendation 3d

The majority of respondents (n=11) thought that the recommendation could improve quality of training and seven thought it could improve capacity as shown in Figure 5.28c.
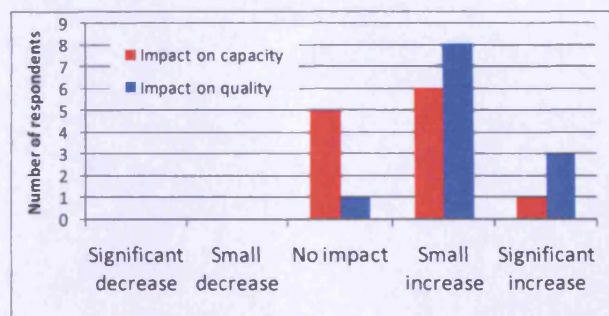
Figure 5.28c Opinion of respondents about the impact of provisional recommendation 3d on training quality and capacity

The respondent who had strongly disagreed had felt that there was a danger that the use of information technology may replace one-to-one contact with the tutor and real practice experience.

T5   "There are already enough tutorials. It is better to go out there and train people about what is actually happening."

This opinion echoed the views expressed by final year pharmacy undergraduates who felt that use of information technology should augment, but not replace traditional teaching methods. (193) Some respondents' views about the use of information technology were influenced by their previous experience of using the technology, as had also been noted by Sargeant. (181)

T2   "Some packages have not answered all the questions that were wanted from them."

T6   "There was such a lot of anticipation of the clinical check pack for pharmacists . . . when the pack arrived, it took hours to go through before you could use it with somebody."

However, there was some agreement that if used selectively to deliver material that was standardised, IT could be useful. The recommendation was amended to reflect that point. In addition, the wording of the recommendation was changed to say "Investigate the use of . . .", to allow judgement to be exercised in deciding if the potential IT solutions were suitable.

Revised recommendation 3d:

Investigate the use of simulation software and computer assisted learning (CAL) packages to provide resources that facilitate training and assessment of key skills and competencies in topics where the content of training is standard and is delivered frequently to successive trainees.

Adoption of the finalised recommendations

The consultation process described here resulted in achievement of a consensus about the finalised recommendations. The education and training subgroup agreed to endorse the recommendations and propose to the Welsh chief pharmacists' committee that they be implemented in a strategy to optimise training capacity in NHS hospital pharmacy training sites in Wales.

Discussion of key findings

The aim of the research described in this chapter had been to develop recommendations for practice that would optimise NHS hospital preregistration pharmacist training capacity in Wales. Use of a questionnaire, interviews and a group discussion enabled all of the objectives of this study to be achieved.

The data obtained from sections one, two and three of the questionnaire achieved the first objective which was to determine whether or not training practices that were not "fit for purpose" were used at NHS hospital pharmacy preregistration training sites across Wales. Practices were found to differ markedly between sites. The following observations were made, indicating that not all training practices may have been "fit for purpose". The findings from this survey supported the case study evidence that:

Trainees did not appear to have appropriate levels of responsibility, for example:

- an average of less than a quarter of trainees' time was spent performing roles that were usually undertaken by pharmacists;
- some trainees did not work alongside a tutor for long enough periods in a clinical environment to be delegated appropriate responsibility;

The content and level of some training was not appropriate, for example, in some sites:

- some trainees spent a large proportion of the training year gathering evidence of technical, rather than professional, competence;
- some trainees were not encouraged them to think about the clinical appropriateness of medicines they were checking;
- the duration of some training rotations was too short to allow for development of competence and confidence.

Effective use was not made of existing training resource, for example:

- at some sites there was a lack of clarity about the overall purpose of the training programme;
- some training rotations were too long and wasted time.

As the training practices were extrinsic factors, they were under the control of the tutors and trainers at each site, and therefore were areas where improvements to practice could potentially be made.

The second objective was to establish whether the lead preregistration pharmacist tutors agreed with provisional recommendations aimed at optimising training workload. There was general agreement with the principles behind each recommendation. Most of the reasons that respondents gave for disagreeing with certain recommendations were to do with issues about the practicalities of achieving the recommended practices.

The third objective was to establish whether or not NHS hospital preregistration pharmacist training sites in Wales had implemented, or planned to implement, the training practices described in the provisional recommendations. The findings demonstrated that some sites had implemented, or planned to implement, a number of the provisional recommendations by the time of the survey.

The fourth objective was to assess the impact of the recommendations on training capacity. Perhaps surprisingly, a number of the provisional recommendations designed to increase training capacity were considered likely to have a negative impact on capacity (provisional recommendations 1a, 1d, 2b & 2c). Several others were thought by many respondents unlikely to have any impact on capacity (provisional recommendations 1b, 1c, 2a, 2d, 2e, 3a & 3b). This may in part have been due to the degree that the recommendations had already been implemented resulting in no further impact on capacity. Recommendations that were already met at all sites would not result in a further change in practice and therefore may not have an impact on training workload. Only two provisional recommendations were considered by several respondents to be likely to have a positive impact on capacity (provisional recommendations 3c & 3d). These were the recommendations that were for action across Wales, rather than at a Trust level.

There were a number of possible reasons why respondents may have thought that some of the recommendations would reduce capacity. These were considered to include:

- in the short or medium term, there would be work involved in implementing new training practices. This may have been a significant consideration for respondents, even if the changes resulted in a reduction in training workload in the longer term;

- the recommendations, whilst potentially making better use of overall training capacity, may have resulted in an increased workload for the individual preregistration pharmacist tutors;

- the respondents may not have considered the wasted capacity that would be released if training practices that were ineffective were stopped;

- the respondents may not have considered the increased productivity of the trainees and their potential contribution to service delivery if training practices were more efficient.

Most of the provisional recommendations were considered likely to improve the quality of training. No definition of what quality training was had been offered, and so these opinions were based on the tutors' own assessments of what quality meant in relation to training. If the definition of quality suggested by Harvey (190) that it is something that is "fit for purpose" was used, then it could be argued that practices that improve the quality of training may also improve the use of available training capacity.

The fifth objective had been to produce final recommendations for use by NHS hospital preregistration pharmacist training sites in Wales. This objective was achieved. Three strategies, each containing four recommendations were developed in the course of this research. The strategies and recommendations are shown in Tables 5.2, 5.3 and 5.4. The consultative approach to recommendation development had identified a number of practical problems for some sites in implementing the provisional recommendations. It was recognised that even though the finalised recommendations were achievable at all sites, some would be challenging and may not be implemented at all sites immediately or in the short to medium term. The education and training subgroup had discussed how the recommendations could be used and had agreed that the recommendations should be challenging, rather than being met by retaining the status quo, as there was a desire to improve practice.

Table 5.2   Strategy 1

	Ensure preregistration trainee pharmacists have appropriate levels of responsibility	Action by:
1a	Ensure that the preregistration trainee pharmacists spend a significant amount of time (equivalent to at least 2 hours per day for 8 weeks[76]) working directly alongside a pharmacist (ideally their RPSGB tutor) in the clinical environment in an apprenticeship-style relationship.	NHS Trusts
1b	Ensure that once accredited to undertake technical accuracy checking, preregistration trainee pharmacists undertake checking of dispensed items on a regular basis.	NHS Trusts
1c	Ensure that the culture of the department is such that every member of staff is aware that it is their role to challenge and question preregistration trainee pharmacists about the medicines that they are checking.	NHS Trusts
1d	Ensure that by the 10th month of the training year, preregistration trainee pharmacists undertake a minimum of 75% of their time performing roles undertaken by a pharmacist (under appropriate supervision).	NHS Trusts

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[76] For the sake of continuity, one pharmacist for an 8 week period is advised. If two pharmacists are used, then it is essential that there is a comprehensive handover of information about trainee progress

Table 5.3   Strategy 2

	Ensure that the level and content of preregistration pharmacist training is appropriate	Action by:
2a	Introduce PACE in the first 5 months of the training year and aim for each individual preregistration trainee pharmacist to gain accreditation within a 3-month period[77] of evidence collection.	NHS Trusts
2b	Limit periods undertaken by the preregistration trainee pharmacists where they do not perform a hands-on role[78] to a maximum of two weeks of in-house pharmacy rotations plus a total of 20 sessions (10 days) of short visits to specialist or non-pharmacy settings.	NHS Trusts
2c	Ensure that the bulk of preregistration pharmacist training is undertaken in generalist areas.	NHS Trusts
2d	Ensure that preregistration pharmacist training is focused on skills development and is pitched at an appropriate level for newly qualified pharmacists.	NHS Trusts

Table 5.4   Strategy 3

|	Ensure that effective use is made of existing training resource	Action by:
3a	Ensure that the purpose of each rotation that the preregistration trainee pharmacist undertakes is made explicit.	NHS Trusts
3b	Hold a regular annual meeting with trainers from all sections to ensure that the aims and delivery of preregistration pharmacist training are aligned across the organisation.	NHS Trusts
3c	Develop an all-Wales database of in-house tutorials where training materials have been prepared and may be suitable for delivery at other sites. Investigate methods of facilitating access to the materials in manner that is efficient, equitable, ensures that the materials remain up to date and gives full recognition to the authors of the original work.	E&T s/g
3d	Investigate the use of simulation software and computer assisted learning (CAL) packages to provide resources that facilitate training and assessment of key skills and competencies in topics where the content of training is standard and is delivered frequently to successive trainees.	E&T s/g

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[77] The 3 month period of evidence collection is normally expected to be consecutive but this does not necessarily have to be the case if trainees' rotas do not allow it

[78] Not performing a hands-on role means rotations or short visits where the trainees' activities do not contribute directly or indirectly to patient care (e.g. observation, shadowing, reading and/or simulation exercises). Rotations where the trainee undertakes these activities during an introductory period prior to undertaking a hands-on role (under appropriate supervision) are excluded from this recommendation. In-house tutorials and residential courses are also excluded.

Discussion of the method selected

This study used a survey to gain quantitative and qualitative data from lead tutors at all training sites in the study population to inform the development of the recommendations for practice. The use of a questionnaire was useful for generating descriptive data about all the sites, allowing comparisons to be drawn and providing a basic understanding of the training practices at each site. This allowed the initial data collection to be relatively efficient and straight-forward to undertake.

The one-to-one interviews were important for probing responses to the questionnaires and improving understanding. This allowed the recommendations to be refined to take into account new perspectives.

The group discussion was useful for reaching a consensus viewpoint. It was important for the lead tutors in the study to be able to discuss their opinions about the recommendations with each other and gain mutual understanding of different viewpoints. It is unlikely that a consensus would have been achieved if the researcher had discussed the recommendations with the respondents individually. Overall, the step-wise, iterative process facilitated involvement of all the lead tutors and enabled relevant issues to be taken into account so that the recommendations were acceptable to all participants.

A 100% response rate was achieved for the survey and the individual interviews. This enabled the views of the lead tutors to be gained, which ultimately resulted in the development of a consensus about final recommendations. Had a lower response rate been obtained, there would have been some doubt about whether this was because there were problems with the recommendations that had not been explored.

The selection of the lead preregistration pharmacist tutors at each site had resulted in the development of recommendations that they were able to endorse. This group were considered to be the individuals who would be most influential in applying the study findings to hospital pharmacy training practices in Wales.

Limitations of the work

This study focussed on one contact person at each site. It is recognised that this potentially excluded other people who were involved in preregistration

pharmacist training unless the lead tutor chose to involve them in formulating their responses to the questionnaire. Ultimately, the lead tutor at each site would be responsible for leading the implementation of the recommendations at their site and therefore it was hoped that they would be aware of, and have taken the views of their colleagues into consideration when formulating their own response on behalf of the site.

The survey captured data at one point in time. Training practices were changing at the time of the study, partly as a result of the publication of the provisional recommendations. Therefore, a similar survey of the same population conducted at a different point in time may be expected to generate different results. This may partly explain why some case study findings are different to the practices reported in the questionnaire, which was distributed one year later.

It is recognised that the survey was limited to NHS hospital preregistration pharmacist training sites in Wales. Some of the training practices, such as the PACE programme, are unique to Wales. The results of this study may not be generalisable to other sites in Great Britain or elsewhere.

Recommendations for practice

The survey instrument could be useful as a method of auditing the implementation of the recommendations. It would be relatively straightforward for all sites to be re-surveyed periodically. The results could be used as a self-assessment tool or for peer-assessment against other training sites. This could be particularly useful for example to enable sites to demonstrate that they were undertaking "best practice"; develop cases for continued or additional funding; or to demonstrating to a regulator that the training was of a particular standard.

No attempt was made to quantify the impact of the recommendations on training workload. This could be useful for informing decisions about how much training resource was needed to train preregistration trainee pharmacists, assuming the recommendations have been fully implemented. This is a topic that could be considered by other researchers in the future if considered important.

Conclusion

This study obtained data from all sixteen NHS hospital preregistration pharmacist training sites in Wales and resulted in the development of recommendations aimed at optimising NHS hospital preregistration pharmacist training capacity. The research achieved a 100% response rate providing confidence that the results of the research applied to the whole population of NHS hospital preregistration pharmacist training sites in Wales.

This was the first time that research into practices that optimise NHS hospital preregistration pharmacist training capacity has been conducted in Wales or elsewhere in Great Britain.

This work has resulted in a series of recommendations aimed at optimising NHS hospital preregistration pharmacist training capacity in Wales.

Chapter 6

General discussion

This final chapter brings together the major findings of this research and examines their relevance to NHS hospital pharmacy training practice in Wales and other settings.

Chapter outline

This chapter begins by reviewing the aims of this research project and discussing the major findings that were revealed as a result of this work. The chapter then goes on to review some changes that have taken place since the study began and considers how the findings may be of relevance to current and future practice. Recommendations for use of the study findings are included. The chapter then summarises the issues that were identified whilst conducting the present study that may be relevant for future researchers to consider. Finally, there is a review of the methodology selected for this study.

Review of the aims and major findings of this research

Whilst an initial research area was identified at the outset, the specific aims of this project emerged as the research progressed. The aims of the research are reviewed here along with the major findings from each stage of the study. Discussion of the individual objectives, their achievement or otherwise, has been discussed within the appropriate empirical chapters.

The first aim of the research was to develop an understanding of the need for research into NHS hospital pharmacy training workload and capacity in Wales. Research to achieve this aim was discussed in Chapter 2. The need for the research had been identified by the Welsh chief pharmacists' committee but the questions that needed to be addressed had not been fully developed or discussed in detail with the researcher. Key stakeholders were interviewed to enable the researcher to understand their viewpoints and gain a more in-depth understanding of the problems. This process facilitated the development of research that was relevant and useful to the practitioners who would need to use the research findings. It was important to undertake this process as the first stage in the study to reduce the risk that information that would inform the

appropriate development of the study would be missed. This process identified that the research needed to address the following topics;

1. measurement of NHS hospital pharmacy training workload in Wales;

2. development of an understanding of the capacity of the NHS hospital service to deliver pharmacy training in Wales;

3. identification of training practices that could help to manage training workload in NHS hospitals in Wales;

4. understanding the culture of training in NHS hospital pharmacy and how this related to training capacity;

5. investigation of the use of the newer developments in training to understand their potential value in managing training capacity.

The first two of these topics were addressed in the second stage of the study (Chapter 3), and the third topic was addressed in the latter two stages (Chapters 4 and 5). The remaining two topics were not addressed in the current study as, ultimately, they were considered to be less of a priority and it was not possible to achieve all of the issues that had been identified within the available resource.

The second aim of the research was to estimate training workload and capacity in NHS hospital pharmacy services in Wales. In 2006 research was undertaken to achieve this aim and is described in Chapter 3. A questionnaire was used to gather data about the work-based training that was being delivered by NHS hospital pharmacy training sites in Wales and understand how this related to training capacity. This research succeeded in obtaining estimates of training workload for diploma pharmacists and novice pharmacy staff to meet registration requirements (that is, preregistration trainee pharmacists, student pharmacy technicians and pharmacy assistants undertaking the NVQ level 2 in pharmacy services). The range of estimates of training workload was wide. However, this work enabled the impact of changes in numbers of these trainees on NHS hospital pharmacy services in Wales to be modelled and understood.

At the time of the study it was predicted that the numbers of NHS hospital pharmacy trainees in Wales needed to rise significantly to meet workforce demands. Using the study findings, it was possible to predict that an increase

in training demand of the magnitude that was anticipated would have resulted in the following effects:

- an increase in the numbers of diploma pharmacists would have created bottlenecks in specialist areas such as medicines information and critical care. Other than that, the contribution that diploma pharmacists made to service delivery would mean that the net impact on workload would have been minimal;

- NHS hospital preregistration trainee pharmacists were estimated to require 6.5 hours of training time per week per trainee. If the numbers of trainees rose from 36 to 66 trainees per year as was predicted, and assuming that no changes were made to training practices, this would have resulted in an increase in workload of 195 hours per week (or the equivalent of 5.2 wte staff) across NHS hospital pharmacy services in Wales;

- NHS hospital student pharmacy technicians were estimated to require 6.4 hours of training time per week per trainee. If the numbers of trainees rose from 35 to 58 trainees per year as was predicted, and assuming no changes were made to training practices, this would result in an increase in training workload of 147.2 hours per week (or the equivalent of 3.9 wte staff) across NHS hospital pharmacy services in Wales. It had been noted that the convention for calculating training workload for student pharmacy technicians did not take into account the contribution to work that student pharmacy technicians made, although it was likely that they did in fact contribute a significant amount of work to service delivery;

- the administrative workload involved in NVQ level 2 pharmacy training was estimated to be 2.6 hours per week per trainee. NVQ level 2 training was thought to be at a peak in the study period because of the introduction of the new training requirements and so no further increase in training workload was anticipated.

Similar work by Stapleton (80) in 2003, that was focussed on NHS hospital preregistration trainee pharmacists in London, had attached a monetary value to the training workload. In this study, no attempt was made to cost the training workload because "time spent" was considered to be a "unit of currency" that would be understood and meaningful to employers and other

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interested parties, without being subject to inflationary changes or differences in salary costs between organisations. The data that were produced could be readily converted into monetary values if required.

The relevance of the findings of this study was demonstrated in 2010, when a request for information was received from the Modernising Pharmacy Careers (MPC) programme board. The MPC programme board was undertaking a review of the funding model for clinical pharmacy placements in England (194) but considered the findings from Wales to be of potential value. At the time of the request, the funding for preregistration pharmacist training in the NHS in England was via the multi-professional education and training (MPET) levy which funded trainees' salary, but not training costs. A review of the MPET levy was being undertaken because it was recognised that funding arrangements for clinical placements were largely historical and were not seen to reflect the quantity, quality or cost of education. (195) A tariff-based approach to preregistration pharmacist training had been proposed where a placement fee of £94 per week would be paid per preregistration trainee pharmacist in addition to salary costs. It was recognised that this was likely to be an underestimate of costs, but this figure was proposed because it was affordable. Information from the present study was requested from the researcher by the MPC programme board (personal communication, June 2010) to inform their discussions about methods of calculating the true costs of training of preregistration trainee pharmacists. The approach of breaking down and measuring workload for all the components of training provided a credible estimate of costs. The results of this study indicated that preregistration pharmacist training costs were considerably higher than the figure that had been proposed in England.

The questionnaire did not succeed in quantifying workload for all types of NHS hospital pharmacy training in Wales. Meaningful data about other work-based training for qualified pharmacy staff and training delivered to external staff were not obtained. In hindsight, these data were collected on an ad-hoc basis at the study sites and so were not available for collection retrospectively. These data would need to be collected prospectively by hospital pharmacy departments if considered important. This could be a potential area of study for future researchers to undertake.

This phase of the study also obtained estimates of training workload in relation to capacity from each NHS hospital pharmacy training site. Whilst acknowledging the difficulties in obtaining accurate estimates of training capacity, the results of this phase of the study indicated that NHS hospital pharmacy training services in Wales had little or no spare training capacity.

Using the unfolding research approach, in 2008, NHS hospital preregistration pharmacist training was selected as the focus of further study because this was where concerns about training workload and capacity were greatest. An increase in NHS hospital preregistration pharmacist training workload of the magnitude predicted may not have been sustainable unless resource was diverted away from service delivery and patient care.

The third aim of the project was to explore reasons for variations in NHS hospital preregistration pharmacist training workload in Wales. Research to achieve this aim was discussed in Chapter 4. A case study approach was used to generate emergent hypotheses about the impact of various training practices on workload in an attempt to understand variations in estimates of NHS hospital preregistration pharmacist training workload between sites. However, none of the emergent hypotheses wholly explained the variation in training time between sites for reasons discussed within Chapter 4.

Although the case studies had not generated sufficient evidence to support the emergent hypotheses, they had been useful in "fleshing out" (48) the picture which informed the development of subsequent research. It had become apparent to the researcher that some of the training practices that were being employed at case study sites were not "fit for purpose". There was evidence that some NHS hospital preregistration trainee pharmacists did not have adequate levels of responsibility; the level and content of training programmes was not always appropriate and that there was wastage of available training resource because of duplication and/or a lack of clarity about what was needed. It is recognised that there may have been operational or other reasons for this. Future research should explore such reasons.

In order to optimise the use of available training capacity, strategies to address these three issues were developed. The strategies contained

provisional recommendations about specific training practices that had been identified. These were developed in the next stage of the research.

The fourth and final aim of the project was to develop recommendations for practice that would optimise NHS hospital preregistration pharmacist training capacity in Wales. Research to achieve this aim was described in Chapter 5.

Provisional recommendations for practice had been based on observations made by the researcher at eight case study sites. In total, there were sixteen NHS hospital preregistration pharmacist training sites in Wales. A survey approach enabled the representativeness of the study findings to be tested across the wider population and provided an opportunity for the provisional recommendations to be consulted upon with stakeholders from all sites.

The survey findings confirmed that there was considerable variation between NHS hospital preregistration pharmacist training practices at sites across Wales. Preregistration pharmacist training in Great Britain was a highly delegated system that was outcome-focussed, as opposed to having pre-specified components. Approved preregistration pharmacist tutors at each training site were responsible for developing training programmes using the resources available at the training site. The pharmacy regulator had recognised that preregistration pharmacist training programmes could vary markedly and had commissioned research to improve the quality management of training. (196)

Summary of the major findings of this research

This study highlighted that some of the NHS hospital preregistration pharmacist training practices in Wales were not "fit for purpose". A summary of these practices and possible reasons for why they were used is provided here. It is recognised that further research would be needed to provide evidence for these conjectures.

The first major finding was that some trainees did not have enough responsibility and did not always make an appropriate contribution to service delivery, both of which could impede effective learning. Some tutors may have been unable or unwilling to delegate responsibility to their trainees until relatively late in the training year. This may have been connected to a concern about the legal consequences of a trainee making an error whilst

under their supervision. Some tutors were protective of their trainees' time and restricted the amount of time spent contributing to service delivery as they wanted to avoid their trainees being used as "a spare pair of hands". However, there may have been a lack of appreciation by some tutors of the benefits of learning "on the job" which would be expected to develop confidence as well as competence.

The second major finding was that the content and level of some training was not appropriate for those approaching registration as a pharmacist. Some preregistration trainee pharmacists were undertaking training programmes that had been designed for other staff groups (such as pharmacy technicians and diploma pharmacists), and/or were not appropriate to their needs (for example, training that could not be completed within the timescale of the preregistration pharmacist training rotations). Selection of some of these materials for preregistration pharmacist training may have been due to convenience, because the materials already existed, trainers were familiar with them and their use may have appeared to make good use of training resource. There may also have been a need and/or desire to apply the same standards that applied to other groups of staff (who had to prove competence before being allowed to work on certain activities) to the preregistration trainee pharmacists.

The third major finding was that there was a lack of a common understanding amongst some tutors and trainers about the purpose of some elements of the preregistration pharmacist training programme. Some lead preregistration pharmacist tutors appeared to have insufficient oversight and control of some elements of the training programme, delegating responsibility for preregistration training to colleagues, sometimes with inadequate mechanisms in place to ensure that the level and content of the training were appropriate. It was possible that this situation may have evolved over time, with assumptions being made by the various parties about what was expected, or what was being delivered, perhaps due to workload pressures. There may also have been insufficient communication about what was needed when the training was first organised.

The researcher developed three strategies to address these issues from the data obtained in Chapter 4 and further confirmed in Chapter 5. These were:

1. Ensure preregistration trainee pharmacists have appropriate levels of responsibility;
2. Ensure that the content and level of preregistration pharmacist training is appropriate;
3. Ensure that effective use is made of existing training resource.

It was considered that if NHS hospitals in Wales implemented the recommendations for preregistration pharmacist training practices included in these strategies, training workload should then be reduced and/or training quality maintained or improved which would lessen the impact of an increase in training demand on services.

By the time the study was completed, some sites had implemented one or more of the recommendations, giving some indication that the study findings were considered fit for purpose. The recommendations were subsequently incorporated into a draft quality assurance tool for education and training in pharmacy departments in Welsh Local Health Boards (197) which had been scheduled to be approved in March 2011. This document was intended for use as an audit tool, initially for self-assessment by training sites.

By the end of the study, there had been a number of other outputs of the study findings which are listed in Appendix 30.

Changes of relevance to the study findings

Since the study was initiated a number of changes had taken place that highlighted the potential relevance of the study findings to current and future practice. These included changes to the NHS hospital pharmacy workforce predictions, changes within the NHS in Wales, changes to pharmacy education and regulation, a change in UK government and a global recession. The implications of each will be discussed in turn.

Changes to pharmacy workforce predictions

In 2006, it had been generally accepted that significant increases in the pharmacy workforce were needed in Great Britain. (39, 40) However, by 2010

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the actual numbers of practising pharmacists on the RPSGB register had only increased slightly. (198, 199) This suggested that either the pharmacy workforce was not developing at a sufficient rate to meet service demands, or that the predictions had been inaccurate. In 2008, Guest et al (200) who had developed the workforce demand and supply model in 2004, (39) revised their predictions for pharmacy workforce demand to the year 2013. Their revised prediction identified a significant shortage of pharmacists in community pharmacy multiples, however, factors such as introduction of new technologies and skill mix were predicted to reduce the demand for NHS hospital pharmacists. The report authors concluded that the projected supply and demand for pharmacists in NHS hospitals was likely to be in balance in 2013. These findings were not supported by evidence from the 2009 annual NHS pharmacy staffing establishment and vacancy survey (201) which indicated that 13.9% of pharmacists' posts and 24.8% of Band 6 pharmacist posts were vacant in NHS hospitals across Great Britain and Northern Ireland. The pharmacist vacancy rate in NHS hospitals had dipped slightly by the time of the 2010 staffing survey, but still showed a vacancy rate of 16.3% for Band 6 pharmacists. (202) One reason for the high vacancy rate for junior hospital pharmacist posts was a lack of preregistration trainee pharmacist posts in the NHS. (203) It appeared that there was still a need to increase the numbers of NHS hospital pharmacy preregistration trainees, not only to develop the workforce but to maintain numbers of pharmacists at existing levels. Despite the high vacancy rates, in 2009, cuts to funding resulted in a fall in the numbers of commissioned preregistration pharmacist training places in NHS London. (204) The Modernising Careers Programme board recognised the crucial nature of this type of data and has highlighted that workforce planning will be included in work stream three of their project. (205)

Political and financial changes

In 2008 the global financial crisis led to a recession in Great Britain. (206) The Labour government was replaced by a coalition of the Conservative and Liberal Democrat parties at the general election in May 2010. The coalition government pledged to reduce the financial deficit in a number of ways including cuts to budgets across all government departments. It was predicted that there would be a long term squeeze on NHS spending from 2012. (207) However, the government promised that there would not be cuts to front-line

health services in England. In effect, budget cuts would have to be managed through efficiency savings and/or by cutting funding for non-clinical activities which could include staff training. The Welsh Assembly Government made a similar commitment to protect the health budget, but in the draft budget for 2011/12, the NHS budget was frozen, resulting in a real-term cut of 7%. (208) It was likely that, in Wales, as had been the case in England, non-clinical services such as staff training may be affected by the lack of funding.

In order to continue to train at a level that could produce sufficient numbers of appropriately-qualified staff for the pharmacy workforce, training would need to be done more efficiently, yet still be appropriate. As a result, strategies that ensured that training practices made effective and efficient use of existing resource had an important role to play in supporting future pharmacy workforce development.

Changes within the NHS in Wales

A number of changes occurred within the NHS in Wales since the study had been initiated. Relevance of the study findings to current and future practice are considered here.

1   NHS hospital pharmacy training numbers in Wales

The original reason for the research was because it had been predicted that between 2006 and 2010 there would be a 50% growth in the numbers of NHS hospital pharmacy trainees in the NHS in Wales. The cuts that were imposed on NHS hospital pharmacy preregistration training in NHS London in 2009 (204) were not replicated in Wales. However, in the years during the study trainee numbers did not rise as dramatically as had been forecast, and in fact remained at levels of the same order as can be seen in Table 6.1. Numbers of diploma pharmacists and student pharmacy technicians fluctuated around the original levels. Preregistration pharmacist training increased, but at a slower rate than had been forecast. Trainee numbers may not have increased as predicted for a number of reasons including:

- central-funding for the additional posts may not have been available;
- advertised posts may not have been filled;
- NHS pharmacy managers may have turned down funding for posts due to a lack of training capacity at their sites;

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- local funding may not have been available to match the central funding for diploma pharmacist posts which were 50% funded by the Trusts;

- NHS pharmacy managers may have decided not to accept funding for additional trainee posts if they were concerned that there would not be a post available for the trainee after the training was completed. This had been a problem in some other professions, notably physiotherapy.

Table 6.1   Number of NHS hospital pharmacy trainees in Wales in each cohort 2006 – 2011[79]

Intake year	2006	2007	2008	2009	2010	2011[80]
Diploma pharmacists	31	28	30	27	30	32
Preregistration trainee pharmacists	38	37.5	35	43.5	44	43
Student pharmacy technicians	32	24	25	30	25	33
Total	101	89.5	90	100.5	99	108

The trainee numbers had not risen as sharply as had been predicted, potentially indicating that there would no longer be such concerns about an increase in training workload. However, it was apparent that the financial constraints on NHS services meant that there would be a need to deliver all aspects of NHS hospital pharmacy services, including staff training, more efficiently.

2   Changes to the NHS structure in Wales

In June 2007 the Welsh Assembly Government published their plans to review the configuration of the NHS in Wales. (209) As one step towards this, in April 2008, mergers of the NHS Trusts resulted in the formation of 7 NHS hospital Trusts instead of the original 13. In October 2009 the NHS structures in Wales were changed again so that 7 integrated Local Health Boards (incorporating NHS hospital Trusts and primary care organisations) were created from the 7 NHS Trusts and 22 Local Health Boards. (210) This study had focussed on NHS hospital pharmacy training, but future training plans would need to take into account training of NHS pharmacy staff in primary care. At the time of the study, no preregistration pharmacist training had been

[79] Data on file in the office of the All Wales Education and Training Pharmacist
[80] 2011 data relate to funding allocation, not staff in post, as appointments had not been confirmed at the time of writing. The actual numbers of trainees would be dependent on successful appointments being made to funded posts and so may be less than (but not greater than) shown.

delivered by the original (primary care) Welsh Local Health Boards (LHBs). (201) However, the original LHBs had employed significant numbers of qualified pharmacists, some of whom were likely to have been trained by NHS hospitals in Wales. It had been suggested that hospital pharmacy training capacity problems could be alleviated by being innovative and working collaboratively with colleagues in other pharmacy settings, such as primary care organisations, to share the burden of training. (203) The merger of the NHS organisations in Wales could facilitate involvement of primary care pharmacy staff in training of preregistration trainee pharmacists. This could build training capacity as well as providing access to training that may be relevant to the future roles that the pharmacists would perform.

3 Changes to budget arrangements for preregistration pharmacist training

In Scotland, a scheme to organise all preregistration pharmacist training centrally was implemented in 2008. (211) The scheme was funded by the Scottish government and administered by NHS Education for Scotland. The principle was that all training placements should be of a suitable quality, and achieve similar learning outcomes, regardless of which setting they took place in. All trainees in the Scottish scheme spent some time in both hospital and community pharmacy.

In 2006 the Welsh Assembly Government provided funding for training of hospital pharmacy trainees through the workforce planning and education commissioning process, which was described in Chapter 1. A separate budget existed to fund salary costs of preregistration trainee pharmacists who were employed in community pharmacies. The two budgets were held separately by different parts of the organisation although anecdotally, there had been discussions about combining the preregistration pharmacist training budget, as had been done in Scotland. This was to allow these budgets to be managed together in the future, although no changes were actually made to funding arrangements at the time. If the budget was combined and NHS pharmacy training in Wales followed the same approach that had been used in Scotland, then training programmes would have to be re-designed. The strategies and recommendations for optimising training capacity that had been identified in this study were broad enough to be applicable across all

pharmacy settings and could be used as a starting point for the re-design of training programmes.

Changes to pharmacy education and regulation

Since 2006 there had been a number of significant changes to regulation and education of pharmacy staff that applied across the whole of Great Britain. Following the publication of the white paper, Trust, Assurance and Safety, (212) plans were put in place to demerge the RPSGB and create a new regulator for pharmacy – the General Pharmaceutical Council (GPhC). The Pharmacy Order 2010 (213) allowed the powers to be passed to the new regulator which was created on 27th September 2010.

During the transitional period, when the RPSGB prepared to split its regulatory and representative functions, a series of consultations were undertaken to develop principles of pharmacy education that would underpin the rules of the new regulator and identify the competencies that were required of pharmacists. (187, 214-216) Once formed, the GPhC further developed education standards for pharmacists, which were being consulted upon at the time of writing. (217)

The Pharmacy in England white paper had identified that there should be more clinical training in the undergraduate pharmacy degree. (218) In recognition of this, the draft education standards ("Future Pharmacists")(216) had allowed for the possibility of the preregistration pharmacist training year to be combined with academic study to form an integrated degree. However, while this was a serious aspiration, the existing model was expected to predominate in the short term. (217) If an integrated model combining preregistration pharmacist training with the undergraduate pharmacy degree was adopted, it would mean significant changes to preregistration pharmacist training. In particular, it would alter the relationship between the universities and the preregistration training providers as there would need to be a clear line of accountability for the whole process. Potentially, the universities could take over responsibility for quality assurance of the preregistration pharmacist training experience and be held accountable for it through the degree accreditation process. Alternatively, some sort of deanery model might be considered.

The RPSGB had already identified the need for a more rigorous quality assurance framework for preregistration pharmacist training. They had commissioned research to review quality assurance mechanisms for medical training and by pharmacy employers in Great Britain in order to inform the development of a suitable quality assurance tool. (196) The findings of the present study could be valuable in highlighting practices for the regulator and other interested parties to consider when developing quality standards.

If an integrated degree, combining academic study with preregistration pharmacist training, was developed, it could affect NHS training workload in a number of ways. Currently, NHS hospitals accommodate pharmacy undergraduates for work placement experience during term time as part of the degree programme and also provide summer vacation experience for those who are considering applying for preregistration pharmacist positions. If the academic study was combined with preregistration pharmacist training in an integrated degree, then presumably both of these programmes would cease, potentially reducing the workload for NHS hospital pharmacy departments. However, there may be an increase in workload due to other factors:

- depending on the time in the degree programme that placement experience took place, the trainees may be less experienced and so require more training before being able to contribute to service delivery;

- if preregistration pharmacist training was formally accredited as a part of the undergraduate degree, then assessment may become more formalised or bureaucratic;

- there may be a requirement to accommodate all pharmacy undergraduates for a period of preregistration training – currently the NHS only trains a proportion of the undergraduates - more may need to be accommodated – but presumably each would be in the service for a shorter period of time as all would spend some time in community pharmacy;

- trainees who were exposed to hospital pharmacy services for less time than in the present system may not be able to reach the same level of competence as the current NHS hospital trainees, which may have an implication for training of newly qualified pharmacists;

- the training programme would need to be re-designed to ensure that the training was at a level appropriate to the knowledge and experience of the trainees.

Regardless of the model of preregistration pharmacist training that could be adopted in the future, the recommendations developed in the present study could help inform to discussions about workload, capacity and fitness of purpose of work-based preregistration pharmacist training.

Implications of the study findings for other organisations

The research undertaken in this study has implications that may be of relevance for non-NHS organisations or those outside Wales to consider in relation to their practices. The implications for each organisation are listed below;

NHS hospital pharmacy training sites in England, Scotland and Northern Ireland

- conduct an audit of preregistration pharmacist training practices using the recommendations contained in this study and take steps to address practices that are not "fit for purpose";

General Pharmaceutical Council

- consider use of the recommendations developed in this study to inform the development of a quality assurance mechanism for preregistration pharmacist training;

Schools of Pharmacy

- ensure that undergraduate pharmacist placement experience is relevant and where possible develops transferable core skills;

Welsh Assembly Government

- consider whether or not the methods of measuring training workload and capacity that were developed in this study are suitable for use in determining training workload and capacity of other healthcare professional groups in Wales.

Suggestions for further research

During the course of this research a number of areas that may warrant further investigation were identified. These included:

- quantifying the workload involved in work-based training for qualified pharmacy staff on other training programmes (that is, all other training except the diploma programme and training for novice trainees) in order to quantify the total resource that is dedicated to staff training;

- quantifying the training delivered to external staff (non-pharmacy) or outside the organisation in order to understand (and potentially cost) how much resource is dedicated to these types of activities;

- development of a method for obtaining accurate estimates of training capacity to inform allocation of training posts to sites;

- understanding the culture of NHS hospital pharmacy training and how this related to training capacity to inform decisions about how involvement of staff in training of their colleagues should be managed;

- investigation of the use of developments in training to understand their potential value in managing training capacity.

Review of methodology

The use of an unfolding approach was appropriate in this study as this allowed the research questions to emerge as the research progressed. This allowed the research to be responsive and relevant, rather than be pre-specified. The scope of the original research questions was very broad and aimed to encompass all of the training that was undertaken in NHS hospital pharmacy departments, although, not all of the objectives were achieved for reasons that were described in the relevant chapters.

A number of different research methods were used during the course of this programme of research. This reflected the fact that different types of data needed collecting at various stages. The research methods collected data that were relevant and useful to achieve the research aims. The response rate was 100% which was pleasing, particularly given that there were a number of stages to the research and that it took place over several years.

The role of the researcher in the research is worth considering because in this case, they entered the field of study from a position of direct involvement in

the subject area under investigation. This position of being from and part of the study setting had advantages and disadvantages. The researcher had a detailed knowledge of the subject areas under consideration, which helped to inform the research. Because they were known to senior pharmacists and other key stakeholders in Wales, they were able to gain access to individuals, and data that an unknown researcher may not have been able to access. They also were personally known to the vast majority of the participants in the study population which may have influenced the participants' decisions to take part in the study. However, knowledge of the researcher from their previous role may have influenced the participants' responses – potentially leading some to provide answers that they thought would be the "right" answer. Similarly, the researcher may have been influenced by their prior knowledge of participants and study sites which may have prejudiced their approach to the research or their interpretation of the research findings. There was a risk that the researcher would make assumptions rather than form conclusions that were supported by the data, although being aware of this possibility reduced that risk. The researcher was aware of this possibility from the start and throughout the study, stood back from it, to distance their views from the research. The assertion that the research remained objective, despite the researcher's interests in the study, is supported to an extent by the fact that the research reports both positive and negative findings. For example, the report highlights that none of the emergent hypotheses that were developed by the researcher were fully supported by the case study evidence. Also, the research findings highlighted that some of the training practices that were taking place were not "fit for purpose". Given that the researcher had had a role in supporting and developing NHS hospital pharmacy education and training practices in Wales, this could be seen as a failing on their part to have ensured that there were appropriate standards of practice in place.

A number of limitations of the present study were recognised. The first limitation was the fact that the research was focussed on NHS hospital pharmacy training in Wales and may not be representative of training that takes place in other parts of Great Britain. Similarly, the research findings may not be representative of preregistration pharmacist training practices in community pharmacy. Studies would need to be undertaken on a much larger scale if similar training workload and capacity research in either of these

settings was considered important, although it is recognised that this would be resource intensive.

Secondly, the research did not quantify the workload that was undertaken away from the hospital setting, such as during cross-sector experience in community pharmacy, during study days or visits to other hospitals or departments, as these elements of training did not impact on NHS hospital pharmacy workload. These data would have to be gathered if the costs of all aspects of NHS hospital pharmacy preregistration training were needed for another purpose.

A third limitation was that two stages of the research (described in Chapters 3 & 5) only obtained the views of one person at each site with overall responsibility for training in their organisation. Whilst this approach was useful in focussing data collection, the findings may have missed information and the opinions gathered may not have reflected the views of the wider population of other pharmacy staff. If it was considered important to obtain the views of the other members of staff, then this could be achieved, although it would require significant additional resource.

Finally it is recognised that the recommendations were developed by the researcher and may have been based, to some extent on their own experiences and opinions. However, the recommendations came from the data that had been collected and ultimately were supported and implemented by the members of the education and training subgroup of the Welsh chief pharmacists, providing a degree of confidence in the study findings.

Conclusion

This research project examined NHS hospital preregistration pharmacist training practices in Wales and generated evidence to support the thesis proposed in this dissertation. In my view, having conducted the research, if NHS hospitals in Wales implemented the recommendations for preregistration pharmacist training practices identified in this study, training workload should then be reduced and/or training quality maintained or improved which would lessen the impact of an increase in training demand on services.

This is the first time that research into NHS hospital preregistration pharmacist training workload and capacity had been conducted on this scale in Wales or elsewhere in the United Kingdom. Using an unfolding research approach, significant new knowledge about training workload, capacity and use of training practices was generated.

The research was needed to quantify training workload and capacity because an increase in the volume and type of training had placed a pressure on NHS hospital pharmacy services. There was concern that further predicted increases in training demand would exceed available capacity.

The workload and capacity of work-based pharmacy training was estimated to enable the impact of a forecast rise in trainee numbers to be modelled and understood. This enabled the effect on NHS hospital pharmacy services in Wales if the numbers of trainees rose to be demonstrated. This new knowledge was used to identify that this study should be focussed on NHS hospital preregistration pharmacist training.

NHS hospital preregistration pharmacist training practices across Wales were explored and it was identified that a number of training practices may not have made optimal use of training capacity. Training practices that may not have made optimal use of resource were identified and included:

Trainees did not appear to have appropriate levels of responsibility, for example:

- an average of less than a quarter of trainees' time was spent performing roles that were usually undertaken by pharmacists;
- some trainees did not work alongside a tutor for long enough periods in a clinical environment to be delegated appropriate responsibility;

The content and level of some training was not appropriate, for example, in some sites:

- some trainees spent a large proportion of the training year gathering evidence of technical, rather than professional, competence;
- some trainees were not encouraged them to think about the clinical appropriateness of medicines they were checking;
- the duration of some training rotations was too short to allow for development of competence and confidence.

Effective use was not always made of existing training resource, for example:

- at some sites there was a lack of clarity about the overall purpose of the training programme;
- some training rotations were too long and may have wasted trainees' and tutors' time.

Strategies and recommendations about training practices that would optimise NHS hospital preregistration pharmacist training capacity in Wales were developed. The strategies were to:

1. Ensure preregistration trainee pharmacists have appropriate levels of responsibility
2. Ensure that the content and level of preregistration pharmacist training is appropriate
3. Ensure that effective use is made of existing training resource

A 100% response rate was achieved at each stage of this research study, providing a degree of confidence that the study findings were suitable for use across NHS hospital preregistration pharmacist training sites in Wales.

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Appendices

Appendix 2
Key Informant Interview Schedule

Before the interview starts:
I would like to thank you again for taking the time to come to the interview and participating in my research. First of all, can I give you a brief overview of the research? Explain background to study.

You have been asked to take part because of your involvement in pharmacy workforce and training.

Please feel able to speak freely. I would like to assure you that all of the transcribed material resulting from this discussion will be anonymised and kept confidential. One last point, if the tape recorder beeps this just means that I need to change the tape.

I have a short list of questions that I would like to ask you:

Please can you describe your interest in pharmacy training workload/capacity?

Have you ever been involved in any research about this subject?
If so, please describe your involvement.

Are you aware of any other work that has been done to investigate training workload or capacity, either in pharmacy or more generally?

Are you aware of any examples, either in pharmacy, or in other professions where training capacity issues have been experienced?

Any examples where they have been successfully addressed?

What would you like to see happen as a result of this study?

Are you aware of any other work that has been conducted in this area?

What areas should this research look into?

Are there any other issues you would like to mention before we finish the interview?

Would it be okay to contact you during future stages of the study?

Thank you

Appendix 3
Key Informant Interview information sheet

May 2006 Ver 2
<u>Capacity and demand for pharmacy training</u>

You are invited to participate in the above research study. Before you decide whether or not to participate please take time to read the following information. It is important that you understand what is involved and the reasons behind doing the research. You are free to discuss the information with others if you so wish and please do not hesitate to ask any questions that you may have. Thank you for reading this.

What is the purpose of the study?

This is a study that has been supported by a grant from the Welsh Assembly Government Pharmacy Practice Development Scheme. Its aim is to identify the current and future demands for training in the Welsh hospital pharmacy service, and identify ways of developing the capacity. It is one of the key objectives identified as a priority by the Welsh Chief Pharmacists committee in their vision document in 2005. The interview will help provide useful information on the issues that this research should address.

At what stage of the research will I be participating?
This is the first stage of the study. At this stage, individuals who are known or thought to have an interest or expertise in this area are being contacted to provide information.

What is an interview?
An interview is used to generate thought and discussion between the interviewer and the interviewee. An interview schedule will be used during the session which will contain a set of questions to be asked or topics to be discussed. You are free to elaborate on these topics as the purpose of the interview is not to restrict your answers. Certain issues arising during the course of the discussion will be investigated further. At this point, I may ask you to elaborate or clarify what has been said. The interview will take approximately 30 – 60 minutes.

Why have I been chosen?
The reason that you have been chosen for an interview is because of your possible interest in pharmacy training capacity.

Do I have to take part?
It is up to you to decide whether or not to take part. If you do decide to take part please read and sign the consent form enclosed. One copy should be returned in the envelope provided. The other copy of the form is for your own records. If you decide to participate you are still free to withdraw at any time before the interview and without giving a reason. If you feel you require more information please feel free to ask, this does not commit you to having to participate. Please feel free to contact myself at anytime should you have any questions to ask either before or after the interview.

What will happen if I decide to take part?
If you decide to take part I will contact you shortly to arrange a convenient time to hold the interview either over the telephone or face-to-face.

What will happen at the interview?
During the course of the interview I will ask a series of open questions. With your consent, the interaction will be audio recorded by a recording device in order that it may be transcribed and analysed.

The broad topics that will be discussed at the interview will include:

- Your interest in training capacity issues – why is it important?
- Current problems with pharmacy training capacity
- How can current training capacity be quantified in a meaningful way?
- How should future training capacity and demand be predicted?
- Knowledge of any research or publications that may inform this work
- Knowledge of similar work or problems in other professions
- Your thoughts on the priorities, in terms of key outcomes, of this work

How will my views be used?
It is important to realise that the information collected during the discussion will be treated in a way to preserve anonymity and confidentiality. However, as I am a pharmacist I am bound by the Royal Pharmaceutical Society Code of Ethics to report any information that may come to light that indicates any unethical or unlawful behaviour by a pharmacist. If this situation should arise it will be discussed with a research colleague who is also a pharmacist as to whether to inform the society or not.

The information generated during the interview will be used to inform the study and will be combined with results from other sections of the research. The results will be distributed through various sources including conference proceedings, papers, abstracts and posters. The results will also be included in an MPhil thesis write up at the end of the period of study. A brief summary report will be available for each participant. If you require a summary of the results, please feel free to contact me. It will not be possible to identify any individuals or organisations from the distributed information.

Will my views be kept confidential?
All of the information gathered during the interview will be kept confidential as stated above. Your name and address will be needed in order to contact you. This will not be kept with the information from the interview and will not be kept for any longer than is necessary. You details will only be seen by the research team. The tapes and transcribed material that result from the interview will also be kept secure by the research team and will not be shared with others. Your details and the tapes collected during the interview will be destroyed after publication of the final research paper.

Who can I contact for more information?
Please do not hesitate to contact me to discuss any aspect of this research. My contact details are:

Lynne Bollington
All Wales Principal Pharmacist, Education, Training and Personal Development
Pharmacy Department
Royal Glamorgan Hospital
CF72 8XR

Telephone: 01443 443134
E-mail: Lynne.Bollington@pr-tr.wales.nhs.uk

Thank you for taking the time to read this information.

Appendix 7
Questionnaire to estimate workload and capacity

Questionnaire to scope the training workload
of the Welsh Hospital Pharmacy Service

Dear education and training colleague

I am researching the training capacity of the Welsh hospital pharmacy service in order to assess current workload and predict whether there is sufficient capacity within the system to produce the pharmacy workforce the NHS needs. This is a Welsh Assembly Government funded project that has been endorsed by the Welsh Chief Pharmacists' Committee. It is identified as a key objective in the Welsh Chief Pharmacists' vision document. It is vital that all secondary care Trusts in Wales participate in the research.

I would be very grateful if you would complete the attached questionnaire to provide information about the current training workload in your department.

Experience from running the pilot indicates that the questionnaire can take up to two hours to complete. You may need to involve several people in the process as the information is unlikely to all be known by yourself. I have included detailed guidance on elements of the questionnaire that I think need explanation. In addition, I will be running a "questionnaire clinic" at the Education subgroup meeting on Thursday 16th November, so that I can address any particular problems that you have encountered. It would be helpful if you can read through the questionnaire before the meeting to identify any issues or questions.

Please do not try to complete the questionnaire before attending the Education subgroup meeting on Nov 16th, as there may be certain definitions and conventions that need to be agreed first.

The questionnaire includes four detailed sections on Diploma in Clinical Pharmacy (Cardiff Uni), preregistration training, student technician training and NVQ 2 training, plus a section on entire workforce. If you personally are not the most appropriate person to answer any of these individual sections, please could you pass that section on to somebody who is? It would be helpful if you could then coordinate return of all sections of the form to ensure that a full response is returned to me by 16th December 2006. If you have any questions, please do not hesitate to contact me on 01443 443134 or Lynne.Bollington@pr-tr.wales.nhs.uk

Thank you, Lynne Bollington

SECTION ONE – CONTACT DETAILS

a)	Your name:	
b)	Job title:	
c)	Base hospital:	
d)	Trust:	
e)	Number of hospital pharmacy sites within the Trust:	
f)	Are you answering on behalf of the whole trust or specific site(s)?	(Please state which sites)
g)	Telephone number:	
h)	E-mail address:	

SECTION TWO – PHARMACY WORKFORCE DATA

2.1 Workforce data – please complete for all pharmacy staff within the trust

Contact details of person completing this section (if different from main questionnaire):

Name: .... E-mail: .... Tel: ....

Please complete the table below to indicate how many pharmacy staff were in post in your trust on 30th September 2006.

Guidance note: Include all staff, including temporary posts and staff on maternity leave. Do not include vacant posts.

Staff type	Number of staff (headcount)	Whole Time Equivalents (WTE)
Pharmacists (other than diploma students)		
1st year diploma pharmacists		
2nd year diploma pharmacists		
3rd year diploma pharmacists (if applic)		
Preregistration trainees		
Pharmacy technicians		
1st year student technicians		
2nd year student technicians		
S/ATOs enrolled on NVQ 2		
All other S/ATOs		
Clerical staff		
Other		

2.2 Numbers of tutors / trainers / assessors in post

How many tutors / trainers / assessors did you have in post on 30th September 2006?

Of these, how many of these actively tutored / trained / assessed in the last academic year (Sept 05 – Aug 06)?

Type of tutor	Number in post (headcount)	Number who performed the role in the last 12 months
Accredited diploma tutors (Cardiff diploma)		
Preregistration tutors/managers		
Qualified NVQ assessors		
Trainee NVQ assessors		

SECTION THREE – DIPLOMA IN CLINICAL PHARMACY (Cardiff University)

Contact details of person completing this section (if different from main questionnaire):

Name: .... E-mail: .... Tel: ....

Please answer the following questions based on actual practice in the 2005 - 6 academic year

3.1 Administrative time

Please give an **estimate** of the **average** amount of time spent on general administrative support **(i.e. not teaching)** for your diploma trainees (incl general admin, approving S/L, arranging rotas, troubleshooting, completing paperwork, etc).

By E&T lead	By diploma site tutor (if different to E&T lead)	By others (e.g. admin & clerical staff)
(hrs / week)	(hrs / week)	(hrs / week)

3.2 Externally assessed components of the course

Some components of the diploma course are externally assessed. Despite this, there may still be an element of time spent **by trainers** in the workplace in supporting the candidate. Please estimate how much time is spent supporting the trainee when undergoing the following components of the diploma programme:

Module:	Externally assessed component	Please estimate the total time spent (if any) by trainers for each of the following components of the diploma programme (hours/trainee)
Module 1 Introduction to clinical pharmacy theory	Patient Management Problems	
Module 2 Introduction to clinical pharmacy practice	Case presentation	
Module 2 Introduction to clinical pharmacy practice	OSCE1	
Module 3 Medicine Clerkship	Case presentation	
Module 4 Surgery clerkship	Case presentation	
Module 5 Therapeutics 1	Written examination	
Module 6 Therapeutics 2	Written examination	
Module 7 Clerkship Option 1	OSCE 2	
Module 8 Clerkship Option 2	Case presentation	
Module 9 Critical care clerkship	Patient Management problems	
Module 10 Information and education	Critical reading exercise	
Module 10 Information and education	Teaching portfolio	
Module 11 Pharmacy Practice	Written examination	
Module 12 Audit	Project	
Module 16 Aseptic services	Portfolio	

3.3   Tutoring workload

Please answer the following questions for each module (clerkship) of the diploma that is offered in your trust.

Module	How long does a trainee usually spend on this module (no of weeks)?	On average how many hours are spent **by the tutor** per trainee per week **in a tutoring capacity** on this module?	How many tutors ran this module in 2005 – 6?	How many accredited tutors are available to tutor this module?	Are trainees ever paired up and taught together (i.e. by the same tutor at the same time) whilst on this module?	If so, what is the maximum number of trainees who undergo this module together?	In the last 12 months did any of the tutors for this module tutor trainees on other modules? Y/N	If so, how many tutors does this apply to?	Please state which other modules they tutored
Module 2 Intro to pharm practice									
Module 3 Medicine clerkship									
Module 4 Surgery clerkship									
Module 7 Clerkship Opt 1 Please state specialism									
Module 7 Clerkship Opt 1 Please state specialism (alternative option?)									
Module 8 Clerkship Opt 2 Please state specialism									
Module 8 Clerkship Opt 2 Please state specialism (alternative option?)									
Module 9 Critical care clerkship									
Module 10 Medicines Information									
Module 16 Aseptic services									

3.4 Modules of the diploma programme undertaken in 2005 - 6

Please complete the table below to indicate which modules were undertaken by each of your diploma trainees between September 2005 and August 2006. For each trainee, please give their name and state which year of the course they are on. Please tick the modules that were being undertaken and for the optional modules please state which speciality was chosen.

Candidate name	Year of course	Mod 1 Intro (theory)	Mod 2 Intro (pract)	Mod 3 Medicine	Mod 4 Surgery	Mod 5 Ther I	Mod 6 Ther II	Mod 7 Opt I	Mod 8 Opt II	Mod 9 Critical care	Mod 10 Info & Educ	Mod 11 Ph Pract w/e sch	Mod 12 Audit	Mod 16 Aseptics
e.g. F Bloggs	1st	√	√	√	√	√								
e.g. J Smith	2nd						√	√ paeds		√	√			
e.g. H Black	3rd											√	√	√

SECTION FOUR – PREREGISTRATION PHARMACIST TRAINING

Contact details of person completing this section (if different from main questionnaire):

Name: .... E-mail: .... Tel: ....

Please answer the following questions based on practice in the 2005 - 6 academic year

4.1   Administrative time

Please give an **estimate** of the **average** amount of time spent on general administrative support (**i.e. not teaching**) for your preregistration trainees (incl appraisals, general admin, approving S/L, arranging rotas, troubleshooting, completing paperwork, organising CSE, etc).

By E&T lead	By preregistration tutor (if different to E&T lead)	By others (e.g. admin & clerical staff)
(hrs / week)	(hrs / week)	(hrs / week)

4.2   Time spent training preregistration pharmacists when on rotations through sections of the department

Please give an indication of the total number of weeks a typical preregistration trainee spends in each section of the department. For each section, please give an indication of the **average** number of hours spent by all trainers in supervising / training them per week.

Component	Total number of weeks spent in this section	Average number of hours spent by trainer(s) per trainee per week
	No of weeks	No of hours per week
Department / Trust induction		
Dispensary		
Stores / purchasing		
Medicines Information		
Ward / Clinical		
Aseptic services		
QA/QC		
Audit		
Cross sector experience		
Other (please state)		
Annual leave/Bank Hols		
WCPPE residential weeks		
Total	**52 weeks**	

4.3   Annual rota

Using a rota for one of your preregistration trainees from the 2005 – 6 cohort as the basis for your answer, please give an indication of the number of weeks spent by a "typical" trainee in your trust on each of the activities listed in the table below:

N.B. If trainees spend their time split between 2 or more departments in any given week, please give an indication of how the time is spent by use of part weeks (i.e. one day =0.2). Please ensure that the total number of weeks in any given month is equivalent to 4 (or 5) weeks.

Month	Dispensary	Stores/ purchasing	Meds Info	Ward / clinical	Aseptic services	QA/QC	WCPPE Courses and other study days	Audit	Cross Sector Exp	Annual leave	Other	Please state (e.g. Induction, LHB etc)
August 05												
Sept 05												
October 05												
Nov 05												
December 05												
January 06												
Feb 06												
March 06												
April 06												
May 06												
June 06												
July 06												

SECTION FIVE - STUDENT TECHNICIAN TRAINING

Contact details of person completing this section (*if different from main questionnaire*):

Name: .... E-mail: .... Tel: ....

Please answer the following questions based on actual practice in 2005/6.

5.1 Administrative time

Please give an **estimate** of the **average** amount of time spent on general administrative support (**i.e. not teaching**) for your student technicians (incl general admin, approving S/L, arranging rotas, troubleshooting, completing paperwork, etc).

By E&T lead	By NVQ assessor (if different to E&T lead)	By others (e.g. admin & clerical staff)
(hrs / week)	(hrs / week)	(hrs / week)

5.2 Time spent training student technicians in rotations through sections of the department over a two year training period

Please give an indication of the total number of weeks a **typical** student technician spends in each section of the department during their training. For each section, please give an indication of the **average** number of hours spent by a trainer (not necessarily their NVQ assessor) in supervising / training them per week.

Component	Total number of weeks spent in this section	Average number of hours spent by trainer per week per trainee
	No of weeks (over a 2 year training period)	No of hours per week
Dispensary		
Stores / purchasing		
Medicines Information		
Ward / Medicines Management		
Aseptic services		
QA/QC		
Other (please state)		
Annual leave/ Bank Holidays		
Total	**104 weeks (i.e. over 2 years)**	

5.3   How many student pharmacy technicians did you train during 2005 - 6?

First years (i.e. in 2005 – 7 cohort)	Second years (i.e. in 2004 – 6 cohort)

5.4   Which NVQ Units were covered between September 2005 and August 2006?

Please give an indication of how many candidates were working towards, and how many completed, each of the following units:

(N.B. Don't include units that were completed in the previous academic year)

NVQ Unit	Number of 1st year trainees who were working towards this unit	Number of 1st year trainees who completed this unit	Number of 2nd year trainees who were working towards this unit	Number of 2nd year trainees who completed this unit
3.01 Dispense medicines and products				
3.02 Control stock of pharmaceutical materials and equipment				
3.03 Providing pharmaceutical information and advice				
3.04 Ensure your own actions reduce the risks to health and safety				
3.05 Manage your work and development				
3.06 Provide an effective pharmaceutical service for customers				
3.07 Support the use of pharmacy information technology				
3.08 Manufacture and assemble sterile and non-sterile batch medicinal products				
3.09 Prepare pharmaceutical products aseptically				
3.10 Assist in the sale of OTC medicines and provide information to customers on symptoms and products				
3.11 Assist in the provision of community specialist activities				
3.12 Facilitate learning through demonstration and instruction				

5.5   Rota – first year student technician from Sept 05 – Aug 06

Using a rota for one of your student technicians from the 2005 – 7 cohort as the basis for your answer, please give an indication of the number of weeks spent by a "typical" first year trainee in your trust on each of the activities listed in the table below:

N.B. If trainees spend their time split between 2 or more departments in any given week, please give an indication of how the time is spent by use of part weeks (i.e. one day =0.2). Please ensure that the total number of weeks in a given month is equivalent to 4 (or 5) weeks.

Month	Dispensary	Stores/ Purchasing	Medicines Information	Ward / Meds Mgt	Aseptic services	QA/QC	BTEC study days	Annual leave	Other	Please state
September 05										
October 05										
November 05										
December 05										
January 06										
February 06										
March 06										
April 06										
May 06										
June 06										
July 06										
August 06										

5.6 Rota – second year student technician from Sept 05 – Aug 06

Using a rota for one of your student technicians from the 2004 - 6 cohort as the basis for your answer, please give an indication of the number of weeks spent by a "typical" second year trainee in your trust on each of the activities listed in the table below:

N.B. If trainees spend their time split between 2 or more departments in any given week, please give an indication of how the time is spent by use of part week (i.e. one day =0.2)s. Please ensure that the total number of weeks in a given month is equivalent to 4 (or 5) weeks.

Month	Dispensary	Stores/ Purchasing	Medicines Info	Ward / Meds Mgt	Aseptic services	QA/QC	BTEC study days	Annual leave	Other	Please state
September 05										
October 05										
November 05										
December 05										
January 06										
February 06										
March 06										
April 06										
May 06										
June 06										
July 06										
August 06										

SECTION SIX - NVQ2 TRAINING

Contact details of person completing this section (if different from main questionnaire):

Name: .... E-mail: .... Tel: ....

6.1 Administrative time

Please give an **estimate** of the **average** amount of time spent on general administrative support (**i.e. not teaching**) for your NVQ 2 candidates (incl general admin, approving S/L, arranging rotas, troubleshooting, completing paperwork, etc).

By E&T lead	By NVQ assessor (if different to E&T lead)	By others (e.g. admin & clerical staff)
(hrs / week)	(hrs / week)	(hrs / week)

6.2 Number of candidates

How many candidates were working towards units of the NVQ 2 between September 2005 and August 2006?

Number of candidates working towards part credit of the NVQ 2 award (i.e. **less than 6 units**)	Number of candidates aiming to obtain the **full NVQ 2 award** (i.e. **all six units**)

6.3 Estimate of time required to complete the full programme of NVQ 2 training

Please give an indication of how long it would take for a "typical" NVQ 2 candidate to complete the entire NVQ 2 (i.e. 6 units) in your department. *Assume that the "typical" candidate has been recently recruited with no previous experience of working in a pharmacy.*

(total number of weeks)

6.4 Which NVQ 2 units were attempted last year?

For all candidates who were undergoing NVQ 2 training between September 2005 and August 2006, please give an indication of how many were working towards, and how many completed each of the following units.

For each unit, please give an estimate the total time spent by trainer(s) to support a candidate through the unit.

NVQ Unit	Number of trainees who were working towards this unit	Number of trainees who achieved this unit	Please estimate the total time spent by trainer(s) to support a candidate through this unit (hours)
004 Ensure your own actions reduce the risk to health and safety			
201 Assist with the provision of a pharmacy customer service			
202 Support the work of your team			
010 Assist in the sale of OTC medicines and provide information to customers on symptoms and products			
203 Assist in the supply of prescribed items			
204 Assist with the assembly of prescribed items			
205 Order, receive and store pharmaceutical stock			
206 Assist with the supply of pharmaceutical stock			
207 Prepare to make pharmaceutical products			
208 Assist with the manufacture and assembly of medicinal products			
209 Assist with the preparation of aseptic products			

6.5   Programme for rotational ATOs

Please give an indication of the total number of weeks a typical rotational ATO would spend in each section of the department in order to complete the full NVQ 2. For each section, please give an indication of the **average** number of hours spent by a trainer (not necessarily their NVQ assessor) in supervising / training them per week. *N.B. Assume rota is for a candidate aiming to achieve 6 NVQ2 units.*

Section	Total number of weeks spent in this section whilst completing NVQ 2	Average number of hours spent by trainer per week per trainee
	No of weeks	No of hours per week
Dispensary		
Stores / purchasing		
Ward services		
Aseptic services		
QA/QC		
Other (please state)		

6.6   Programme for non-rotational ATOs

Please give an indication of the total number of weeks that a "typical" candidate would spend working towards the relevant units of the NVQ 2 for the following areas. : For each section, please give an indication of the **average** number of hours spent by a trainer (not necessarily their NVQ assessor) in supervising / training them per week.

Section	Total number of weeks spent in this section whilst completing units of the NVQ 2	Average number of hours spent by trainer per week per trainee
	No of weeks	No of hours per week
Dispensary		
Stores / purchasing		
Ward services		
Aseptic services		
QA/QC		
Other (please state)		

SECTION SEVEN – OTHER IN-HOUSE TRAINING PROGRAMMES

For all training programmes, other than those mentioned previously, an estimate of the total amount of time that is dedicated to training has been made by a small sample of E&T leads.

Please decide whether you agree with their estimates of time spent supporting these programmes. If you agree with the estimate, please indicate your agreement. If you don't, please give an indication of the amount of time you think is dedicated to supporting that programme.

Programme	Estimate of total amount of time spent by **pharmacy staff** in supporting trainee through whole programme	Rationale	Do you agree with the estimate? Y/N or Don't know / N/A	If not, how many hours you estimate are spent	How many people from your trust did this training in 2005 – 6?
Independent / Suppl Rx	*0 hours*	Student led – training not based in pharmacy			
Management Courses (e.g. Morpeth, MBA, ILM, Prem Prog etc)	*0 hours (1 hour if there is a project)*	Student led – external supervision. Project may require some discussion			
WSP MSc (post clinical diploma)	*12 hours*	1 hr meeting per month			
Other postgrad MSc/ MPhil. MEd etc	*0 hours*	Student led – external supervision			
PTQA	*0 hours*	Student led – not work based			
Other post grad diploma (e.g. Bath APT3, dip in therapeutics, Dip in Psy Pharm)	*0 hrs*	Student led – external supervision			
Other PG certificates (e.g. Cert in Psy Ther)	*0 hours*	Student led – external supervision			
Prof checking for new pharmacist staff	*2 hrs per trainee*	1:1 meeting, discussion of chart, feedback on assessment			
Learning @ Lunch	*30 mins per trainee*	3 hrs prep, 1 hr to run, 1 hr admin etc – ave. 10 people per group			
Cross sector experience for comm. preregs	*10 hours per trainee*	Admin (Dates, Hon Contracts, Occ health etc) plus training (extra hour per each accompanied half day session (e.g. ward visit), some pairing up			

Programme	Estimate of total amount of time spent by other **pharmacy staff** in supporting trainee through whole programme	Rationale	Do you agree with the estimate ? Y/N or Don't know / N/A	If not, please state how many hours you estimate are spent	How many people from your trust did this training in 2005 – 6?
MPharmIV projects	*10 hours*	1 hr / week for 10 weeks			
UG Clinical placements	*8.5 hours*	One hour per each half day session plus admin, intro and review			
UG Summer Vacation	*15 hours*	30 mins per trainee per day (10 hrs) plus recruitment, admin, induction and review (average 5 hrs per trainee)			
Erasmus students	*15 hours*	Same an UG vacation student (see above)			
School work experience	*2 hours*	1 day, shadowing plus admin time (Hon contracts etc all done centrally)			
NVQ assessor training	*0 hours*	Student led – assessment done by WCPPE			
Train the trainers	*0 hrs*	Student led – WCPPE assessed			
Accredited Checking Technician training	*65 hours*	Extra time checking (30 mins per day for 4 months), induction, review and discussing portfolio, panel interview			
Reaccreditation of ACT	*2 hours*	Panel interview and check of dispensing log			
Medicines Management	*12 hours per module (15 hours for Drug Hx) 51 hours in total*	45 mins per day on ward, plus panel time (plus observation time for Drug Hx taking)			
Reaccreditation of Medicines Management	*2 hrs 30 mins / trainee*	Ward visit – 1 hr, Panel – 1 hr 30 mins (30 mins x 3 people)			
Patient counselling for technicians	*6 hours /trainee*	Ind – 1 hr, obs 3 hrs, panel (30 x 3) & portfolio review 2 hrs			

Programme	Estimate of total amount of time spent by other **pharmacy staff** in supporting trainee through whole programme	Rationale	Do you agree with the estimate? Y/N or Don't know / N/A	If not, please state how many hours you estimate are spent	How many people from your trust did this training in 2005 – 6?
Mandatory training	*15 mins per member of staff / year*	Admin time to check records for all staff			
Manual Handling	*30 mins per trainee per year*	2 hrs / trainer / session, 4 – 6 people / session			
KSF reviewee training	*30 mins per trainee*	1 hr session, max 20 people, plus prep time			
Departmental induction	*1 day / trainee*	Rotas, visits, enrolment			
Doctor Induction	*4 hrs / year*	2hr per HO intake 2 x per year			
POMs training for nurses	*10 hrs per ward*				
Aseptic revalidation (pharmacists)	*3 hours*	Quarterly			
Aseptic revalidation (technicians)	*2 hours*	Quarterly			
Other (please state)					

SECTION EIGHT - TRAINING PROVIDED TO EXTERNAL ORGANISATIONS
(E.G. WCPPE, WSP)

Please list all the external teaching sessions (**i.e. delivered in work time, but not at work**) that have been provided by any member of trust pharmacy staff in the 2005 – 6 academic year (for example, lecturing, junior doctor teaching, marking, assessing OSCEs).

Please include all activity (irrespective of whether annual leave was booked, payment was made, etc).

If no records of external training provided by staff are kept, please attempt to answer as fully as possible.

Audience (e.g. diploma p'cists, prereg, undergrads, student tech, junior doctors, nurses, etc)	Type of event (e.g. study day, OSCE assessor, exam paper marking)	Programme organiser (e.g. University, WCPPE, Post grad centre,)	Number of hours

Please add an additional sheet if necessary.

SECTION NINE - ESTIMATE OF TRAINING CAPACITY

Capacity can be described as being a measure of the amount of work a system can perform (as opposed to **workload** which describes what is actually being done).

Most of this questionnaire has focussed on quantifying training **workload**. It would be very useful to get your views on your current training capacity, which is less straightforward to quantify.

9.1   Please describe in a few sentences your perceptions of your training workload in relation to your current training capacity

....

....

....

....

9.2   If you had to quantify your current training workload in relation to your current training capacity, what figure would you use to represent this relationship in percentage terms?

i.e. (0 – 100 %) – so if working at full capacity = 100 %

(If you feel that capacity is exceeded, please indicate by to what extent (e.g. 150 % if workload exceeds capacity by half))

...................%

9.3   Have you ever experienced any situations where you feel that training workload has exceeded training capacity? If so, please describe what happened.

....

....

....

....

9.4   Have you ever been in the position of refusing requests to do additional training due to a concern that capacity would be exceeded? If so, please describe the situation and what happened as a result.

....

....

....

....

SECTION TEN - FURTHER DETAILED INFORMATION FROM TRAINERS AND ASSESSORS

Thank you very much for providing the information requested in this questionnaire.

The next phase of the research will be to discover more about the individual trainers' opinions about their role and what impact their training and assessing workload has.

Therefore, I would be very grateful if you would provide the names of all trainers and assessors who were involved in training any of the programmes mentioned in 2005 - 6 to whom it would be appropriate to send a follow-up questionnaire.

N.B. This project is registered with Pontypridd & Rhondda NHS Trust for R&D purposes. Any personal data provided on this form will be kept confidentially and only used for distribution of a questionnaire. It will not be used for any other purpose and the personal information will be destroyed at the end of the research project.

Please provide names below:

Role	Name	Base hospital
Diploma tutors		
Prereg tutors		
NVQ assessors		
Other trainers		

Once all sections have been completed, please could you return this questionnaire to me in the envelope provided by **16th December 2006**?

Thank you very much. Your time is very much appreciated.

Lynne Bollington
All Wales Principal Pharmacist, Education, Training and Personal Development
Pharmacy Department, Royal Glamorgan Hospital
Llantrisant, CF72 8XR

Appendix 8
Briefing sheet with conventions about questionnaire

Conventions definitions and points that may need clarification:

Page 1

1f   If you are answering on behalf of whole trust, please ensure you capture data (e.g. headcount) from all sites, not just main training site.

Page 2 – ATOs and clerical staff

If assistants are paid on A&C scales, but undertake pharmacy roles (as opposed to clerical duties), include them under S/ATOs.

Number of tutors / assessors in post

Please record total number of people (headcount) even if job shares etc

Page 3

Only record time spent by trainer in supporting trainee to prepare for assessments (not time spent undertaking assessment, if they happen to be involved in OSCEs etc at Uni)

Page 4 – Trainer time = Additional time spent by trainer

Trainer time is the total time (by individuals or a group of people) dedicated to supporting the trainee through the clerkship including preparation, appraisals, teaching etc over the whole clerkship.

For ward visits, this should be calculated by working out difference in value between how long an activity would normally take, and how long it would take if they had a trainee with them. (E.g If visit to ward usually takes 1.5 hours and with trainee, it takes 2.5 hours, the trainer time = 1 hr / day.)

If the diploma trainee replaces the tutor on the ward and frees up trainer time, then this may actually be a negative value, especially towards the end of the clerkship. Remember to give your estimate of the **average** number of hours per week

Please be honest – a negative or very low answer in some clerkships may seem strange, but will help highlight where the true bottlenecks in capacity are.

Page 6 – Trainer time = Additional time spent by trainer

Trainer time is the total time (by individuals or a group of people) dedicated to supporting the trainee through the section including preparation, appraisals, teaching etc.

Trainer time is difference in time between doing the activity normally and doing it with the trainee. If the activity is purely being performed because they are a trainee (e.g. checking ACT portfolio), then record full time taken. However, if the activity takes

longer, but would still have needed to be done, (e.g. an accompanied ward visit) record the extra time required.

Need to estimate **average** time per week for the total number of weeks that the trainee is there.

Page 8 – Trainer time per week

Trainer time is calculated on the same principle as above. N.B. Total number of weeks over **two** years

Page 9 – NVQ units being worked on.

Only provide details of units being done in 2005 – 6 – not those already finished.

If work is done by in-house trainers to support BTEC course work, include it as "other" (e.g. BTEC course work – 60 weeks (ie term time) and an estimate of the number of hours per week during term time that the trainer needs to have input).

Page 18

Record all teaching/ assessing that is done for people external to your pharmacy department (e.g. Junior Drs, Prereg weeks, Diploma) in work time (ie not evening courses for WCPPE)

Include time for delivery and travel time, but not preparation time.

For completeness, include teaching done by members of staff who are externally funded (e.g. ACDs) but no need to list all separate sessions, just give amount of time dedicated to the teaching role (e.g. 2 days / week) as a global figure.

Page 19 - Estimate of workload in relation to capacity

If workload is less than full capacity, indicated as 0 – 100%

If workload exceeds capacity, indicated as 100 +%, so if workload is double capacity, the figure is 200 %

Please don't compare answers between trusts as it will skew the data!

Page 20

Please photocopy extra sheets if required

Lynne Bollington

All Wales Principal Pharmacist, Education, Training and Personal Development

Nov 06

Rhyl

Bangor

Wrexham

North Wales

Aberystwyth

Mid & West Wales

Carmarthen

Abergavenny

Haverfordwest

Llanelli

Port Talbot

Merthyr Tydfil

South East Wales

Swansea

Newport

Bridgend

Llantrisant

Cardiff

Appendix 14
Consultation paper on selection criteria for case study sites

Optimising NHS Pharmacy Training Capacity
Criteria for selection of case study sites

A paper seeking the views of the members of the Welsh Chief Pharmacist's Committee (18th April 2008)
and their Education and Training subcommittee (24th April 2008)

Introduction

A new phase of a project to investigate pharmacy training capacity, funded by the PPDS, commenced in February 2008. The research will involve case studies to investigate the practice of preregistration pharmacy education and training across a number of selected sites in Wales. This paper aims to provide information about this element of the proposed research; seek views about criteria to be used to select the sites for detailed study; and obtain agreement in principle to participate in the research from any sites that are subsequently selected.

Aim

The aim of this phase of the research is to investigate reasons for variations in estimates of trainer workload for preregistration pharmacy training in the NHS in Wales and identify good practice.

Case study protocol

The protocol for the case study will include the following elements:

- Identification of criteria for selection of specific sites
- Selection of a number (to be determined) of case study sites

At each case study site:

- Documentary analysis of relevant records (e.g. training programmes, minutes of meetings), where they are available and when permission to access the documents is granted from the chief pharmacist or their representative .
- Structured interviews (telephone or face-to-face) with tutors / trainers to clarify and validate data, and provide an understanding of training practices
- Group interviews (face-to-face on hospital sites) with groups of current and previous preregistration trainees to gain a trainee's perspective of the training programme

The case studies will take place between May and October 2008. Dates of site visits and interviews will be agreed with each site in advance to ensure that as far as possible any inconvenience is kept to a minimum.

Criteria for selection of case study sites

The following draft criteria are proposed for selection of case study sites:

- Sites that estimated trainer time to be in the low, mid and high range (at least one site from each part of the range) in the original training capacity questionnaire in 2006

- Sites that have estimated that they are under-capacity, whilst appearing to have average, or above average, training workload
- Sites that are identified (either by themselves or others) as having novel training practices that help optimise capacity, and that may be transferable, and hence are worthy of further investigation
- Where possible, attempts will be made to ensure that the case study sites reflect the geographical spread and diversity of delivery of pharmacy services in the NHS in Wales.
- Sites can volunteer to be a case study site if this meets a local need (priority will be given to meeting the selection criteria and is subject to researcher availability)

Action requested

The Welsh Chief pharmacists and members of their education and training subcommittee are asked to consider the above criteria and provide any comments or feedback about the suitability or otherwise of the criteria. Any additional suggestions for criteria are welcomed at this stage. Feedback on the criteria, requests to be case study sites, and any other comments are requested by **30th April 2008**. The Welsh Chief pharmacists are asked to agree in principle with being a case study site if selected. If, for any reason, they do **not** wish to be a case study site they are asked to inform the researcher at the earliest opportunity. No reasons need to be provided.

Lynne Bollington

Researcher April 2008

Appendix 15
Letter to lead tutors at case study sites inviting participation and requesting consent

<div align="right">
Lynne Bollington

7 Rue du Nant

CH-1207

Geneva

Switzerland

1st May 2008
</div>

Lead tutor

Pharmacy Department

NHS hospital pharmacy training sites

Wales, UK

Dear tutor

Case Study site for training capacity project

I am in the process of doing research to find ways of developing capacity for preregistration pharmacy training in the NHS in Wales. This builds on earlier work investigating how much time is spent on training and mapping this to workforce predictions. The research has been supported by the Welsh Chief Pharmacist's committee and members of their E&T subgroup. This work is particularly important for the NHS in Wales, given the increase in training numbers that have been commissioned for the 2009 intake.

The reason for approaching you at this stage of the project is to seek your agreement to be one of a number of case study sites. The case study sites have been selected using criteria that have been developed and consulted on. The specific reasons for wishing to do further investigations at your site are:

. . . .

Whilst this is the main reason for your selection, I would also like to explore preregistration training with you more widely, to get a better understanding of current practices and explore potential developments.

If you are willing to be a case study site, it will involve the following:

- Submission of copies of relevant paperwork, if available (e.g. RPSGB application for accreditation to be a training site).

- An interview with the researcher (either by telephone, or, if preferred, face to face), to discuss preregistration training practices.

- A site visit by the researcher that will include a group interview with past and present cohorts of preregistration pharmacy trainees.

- Submission of other relevant paperwork identified through the course of the interviews or site visit.

All information that is gathered through the documentary analysis, site visits and interviews will be anonymised. No material that could identify specific individuals will be included in the final report, although the list of which sites were used as case studies will be made available.

Copies of the project protocol and the selection criteria for case study sites have been sent to all sites in Wales previously. If you would to receive these again, in order to consider your involvement, please let me know. If you would to discuss this, or need any further information, please do not hesitate to contact me. My contact details are:

E-mail: Lynne@bollington.net

Telephone: 0041 22 700 4257

If you are willing to be a case study site, I would be grateful if you would return the attached form, along with a copy of the most recent submission for accreditation as a RPSGB training site. I have enclosed an addressed envelope for your convenience. Once I have received those, I will contact you to arrange suitable dates and times for meetings and visits.

Thank you for your help. I look forward to hearing from you soon.

Yours sincerely

Lynne Bollington

Researcher

Cc Chief Pharmacist

Optimising Pharmacy Training Capacity

Consent to be a case study site

Please read the following statements and indicate whether you agree with each one by placing your initials in the adjacent box and signing the declaration at the bottom of the page.

Initials

I am aware of the research into optimising pharmacy training capacity and understand the reasons for this site being selected as a case study site.

I have discussed this request to be a case study site with the Trust chief pharmacist and have their permission to participate in the research

I agree to provide the researcher with papers that are relevant to the research on request, although I reserve the right to decide which information to provide and what to withhold.

I am willing to take part in a structured (telephone / face to face) interview with the researcher to discuss preregistration training practices. The date and time of the interview will be at a mutually convenient time.

I agree that the interview may be tape-recorded to aid recording of the data.

I agree to allow the researcher to visit the site and conduct a group interview with one or more groups of past or present preregistration pharmacy trainees.

I am aware that the information gathered during the course of the case study will be anonymised prior to inclusion in a report, but that a list of participating sites will be published.

I understand that if, at any stage in the research, I wish to withdraw my consent to being a case study site, that I may do so.

I agree to participate in research to optimise pharmacy training capacity by permitting the researcher to use .... hospital as a case study site.

	Name (print)	Signature	Date
Researcher			
Participant			

Appendix 18
Case study lead tutor interview schedule

Optimising training capacity
Tutor interview schedule

Name:
Site:
Start time:
Introduction

Recap on place of this interview in overall project
We know:

- How much time is spent by trainers on training (6.5 hrs per week per trainee on average).
- We need to increase the number of trainees
- That there is insufficient capacity using existing model

Aim of this part of the project:
This research aims to identify ways of managing the increased workload.
Using case studies to understand practices at various sites and highlight good practice.

So, the purpose of this interview is . . .
- To check understanding of what I've already been told (and note changes)
- To explore ideas of how to increase capacity
  - N.B. Focussing on preregistration
  - N.B. Reassure that intention is to be non-judgemental, not making comparisons, aim is to focus on finding what works.

There are a number of strands to the case study
- Interviews with tutors
- Documentary analysis
- Site visits – observation
- Opportunity to meet other trainers
- Interviews with current and previous cohorts of trainees

So . . .onto this interview:
Check receipt of paperwork
Interview is being taped
Tape will beep after 30 minutes – hold thoughts until I have changed the
tape.
Any questions before we start?

Questions

SECTION ONE – WORKLOAD AND CAPACITY

Very broad question to start with:

1   What are the issues regarding preregistration training workload from your perspective?

>   What has happened to it over time?

>   Is it currently a problem, or do you foresee it being in the future?

Validation of original questionnaire data

E-mail questionnaire back to the respondents for re-reading prior to discussion

Referring to the questionnaire that was completed in 2006:

2   Has anything about your training programme changed significantly?

>   e.g. Rotations added or removed, Any major changes to the programme?

3   Are your estimates of trainer time broadly the same or has anything changed?

>   e.g. any impact from different cohorts of trainees, different tutors

Relative time taken at different sites:

4   On average 6 hrs per trainee per week is spent on preregs. Your site spends x hours per trainee per week. Do you have any thoughts about why that might be the case?

>   If less time than average - how is this achieved?
>   Is it possible to replicate this at other sites?
>   What would be the impact?

Capacity

5.   You indicated you were (percent) under/at/over capacity with a total of x preregs in 2006. What informed this estimate – and does it still hold true today? If not – what is the current status?

SECTION TWO – IN-HOUSE TRAINING PROGRAMME

Training programme design - content

6   How do you decide what to include in the programme?

      Prompt – to what extent are the performance standards used to define what is done, compared with starting with what is available locally, and fitting PS around this?
      Prompt – to what extent is the in-house programme designed to complement the WCPPE programme – or vice versa?
      Prompt - Is there much repetition or superfluous material?
Request copy of programme outline if not already received

Approach to teaching and training

7   What is the balance between teaching trainees and allowing them to discover information?

      Prompt: On the job training, vs didactic, workshops, PBL etc
      Prompt – Is there scope to reduce the amount that they are taught?

8   Are opportunities to involve other HCPs in the training of preregs utilised?
Expand

Evaluation

9   Describe the process you use to evaluate the programme

      Is there an annual report? – request copy

Paperwork and record keeping

10   Does the paperwork and record keeping aspect of preregistration training help or hinder the process?

Ask to see copies of relevant paperwork, if identified at the interview stage

SECTION THREE – GOOD PRACTICE

Given your experience of preregistration training – I would like your opinion about what is good about preregistration training

10   Which elements of your existing training programme do you most value (and why)?

What are they?
What are the benefits?

11   Are there any aspects of your programme that are different compared with other programmes that you are aware of?
Please describe what and why
Ask to see e.g.s in action at site visit

12   Are there any elements that you would include in an ideal programme, but are not feasible at present?
Describe what, and why considered of value.
What would be required to make this possible?

SECTION FOUR – THE TRAINEE

13   What qualities make some preregs easier to train than others?

Prompt: Could anything be done to ensure that more of the trainees had these qualities?

14   To what extent does the learning style of the trainee(s) influence the programme?

If adaptations have been made, what impact does this have?

15   To what extent does the previous experience of the trainee influence the programme?

Are some elements repeated? Is there scope to reduce this?

16   How do you ensure that the level of responsibility and work they are given is appropriate to their experience and status?
Is there scope to increase the responsibility and/or work of trainees at an earlier stage?

17   Describe the position of the preregistration trainee in the departmental structure.
Prompt – Are they a trainee or a worker?
How are they perceived by others?

SECTION FIVE – TUTORS AND TRAINERS

18   Describe the extent to which education and training is supported and valued within the department
Prompt: Training culture? Learning organisation? Everyone's role
                     Low priority/ burdensome / favours

19   Who is involved in teaching & training?

       Prompt: Is there scope to broaden the activity to others?

       Impact on capacity/ quality – Views?

20   What support is there for those involved in training?
Prompt - What training is there for trainers? – in-house or external Is there a trainers group – do they meet? Copies of meeting notes,

21   What would help to make trainer workload more mana999geable?

SECTION SIX - EXTERNAL SUPPORT

22   What external support would you find valuable in increasing capacity for training

(e.g. additional training resources, centralised delivery of training, additional tutors or tutor support, other?).

SECTION SEVEN – INCREASED WORKLOAD

23   When it comes to the crunch . . .If you had no choice but to increase your intake of prereg trainees beyond your estimated capacity: - What would you do to ensure that a programme could be delivered?

24   Are some elements fixed, and some variable, depending on No of trainees. E.g. . what would happen if No of trainees increased – by one, by three?

25   Is there anything else that you would like to mention?

Appendix 22
Case study lead tutor information sheet

Optimising Pharmacy Training Capacity
Notes in preparation for tutor interview

Thank you once again for agreeing to participate in the project to optimise pharmacy training capacity in the NHS in Wales by allowing me to use your site as one of a number of case study sites.

One step in the process is to take part in an interview with me to discuss preregistration pharmacist training practices. In order to increase the potential for the interview to reveal useful data, the main areas to be covered are summarised here in order that you have the opportunity to have considered some of the issues that will be discussed prior to the interview.

The main areas for discussion will be:

- Reflecting on the overall findings of the training capacity questionnaire from autumn 2006
- Current training practices – how do you decide what is included, what is "taught" and how (e.g. tutorials, ward based teaching).
- Documentation – how is it used, benefits. Thoughts on any improvements to the process.
- Review of practice - relative merits of certain aspects of programme, what could make training more "efficient"?, identification of innovation and what changes, if any, could be made to develop capacity.
- Variations in the trainees themselves – what makes some people easier to train than others? How & why do they vary – is any adaptation to the training programme made?
- Role of the trainee – i.e. when and how is transition from student to worker made? Could it be any earlier?
- Role of the tutor/trainers/mentors – use of, support for, workload, attitude of staff towards training demands, conflicting priorities
- External support for training – what would help alleviate capacity issues?

It would be helpful if you could have considered these issues prior to the interview to help you be prepared to answer my questions. You will also be asked if there are any other issues, from your perspective that are important and that you think are relevant to this work.

I would anticipate that the interview will take around one hour, but it could take longer, depending on how much you have to say. I would appreciate you keeping this time free in your diary, and if possible, find a place that is likely to be free of interruptions to accept my call.

Thanks very much for your help. I look forward to speaking to you soon.

Best wishes,

Lynne Bollington, June 2008

Appendix 23
Case study current and previous cohorts information sheet and consent form

You are invited to participate in the above research study. Before you decide whether or not to participate please take time to read the following information. It is important that you understand what is involved and the reasons behind doing the research. You are free to discuss the information with others if you so wish and ask any questions that you may have.

What is the purpose of the study?

The aim of this study is to investigate workload associated with preregistration pharmacy training in the NHS in Wales and identify good practice.

At what stage of the research will I be participating?

This is the second phase of the study. Several hospital sites in Wales have been chosen as case study sites to investigate the practice of preregistration pharmacy education and training across the NHS in Wales. You are invited to take part in either an individual or a group interview with other trainees at your site - the size of the group will be dependent on availability of eligible consenting participants.

What is involved in the interview?

An interview is used to generate thought and discussion between the interviewer and the interviewee(s). An interview schedule will be used during the session that contains a set of questions to be asked or topics to be discussed. You will be free to expand on the topics as the purpose of the interview is not to restrict your answers. The interview will take approximately 60 - 90 minutes.

Why have I been chosen?

You have been chosen for an interview because of your current or recent experience of being a preregistration pharmacy trainee and are currently working in a hospital that is being used as a case study site.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part please read and sign the consent form enclosed. The consent form should be returned to your local preregistration tutor or handed to the me on the day of the site visit. If you decide to participate you are still free to withdraw at any time before the interview. If you feel you require more information please feel free to ask, this does not commit you to having to participate. You are welcome to contact myself at anytime should you have any questions to ask either before or after the interview.

What will happen if I decide to take part?

If you decide to take part you will be asked to participate in an audio-recorded (individual or group) interview on a day in July or August – the preregistration tutor at your site will be able to give you exact details of the venue and time.

How will my views be used?

The information collected during the discussion will be treated in a way to preserve anonymity and confidentiality. The information generated will be used to inform the study and will be combined with results from other sections of the research. The results will be distributed through various sources including conference proceedings, papers, abstracts and posters.

Will my views be kept confidential?

The information gathered during the interview will be anonymised to remove details that will identify individual contributors. The tapes and transcribed material that result from the interview will be kept secure and will not be shared with others. Your details and the tapes collected during the interview will be destroyed after publication of the final research paper.

What will happen at the interview?

During the course of the interview I will ask a series of open questions. With your consent, the interview will be audio recorded in order that it may be transcribed and analysed. The broad topics that will be discussed at the interview will include:

- Your training programme – for example
    o What worked well?
    o Is there anything you would change?
    o Was there any unnecessary repetition – (e.g. with your undergraduate or Summer vacation experience)?
    o Did the approach to teaching and learning suit you?
    o How would you compare the training that first year medical students get to your own experience. Which approach is right for pharmacy trainees?
- Your reflections on your own contribution to the preregistration experience
    o Were you adequately prepared for the preregistration year?
    o Would anything have helped you be better prepared for the year?
    o Were you able to take responsibility for your own learning?
    o How did you make the transition from being a student to being a professional and when in the year did this transition take place?
- Your opinion of your role in the pharmacy team
    o Did you feel that you were given an appropriate level of responsibility for your qualifications and experience?
    o Did you feel you had the opportunity to make a worthwhile contribution to service delivery?
    o How were you perceived by others?
    o Would you have liked to have had more autonomy or independence?
- Your impressions of training workload and capacity at the study site
    o Could anything be done to make sure that trainers' time is used as effectively as possible?

o   What would happen to preregistration pharmacy training if there were more trainees at this site?

- Your suggestions for what might improve the efficiency or effectiveness of training

Who can I contact for more information?

Please do not hesitate to contact me or the local preregistration tutor to discuss any aspect of this research. My contact details are:

Lynne Bollington

Telephone:

E-mail:

Thank you for taking the time to read this information.

Title of project: **Optimising Pharmacy training capacity**

Name of researcher: **Lynne Bollington**

CONSENT FORM

Interview – current preregistration trainees and recently registered pharmacists

Please read the following statements. If you agree with them please initial each box and sign the declaration below.

1	I confirm that I have read and understood the information sheet about the above study and have had the opportunity to ask questions.	
2	I am willing to take part in a structured (group) interview with other trainees and the researcher to discuss preregistration training practices.	
3	I understand that my participation is voluntary and that I am free to withdraw my consent at any time before the interview	
4	I agree that the interview may be audio recorded to aid data capture.	
5	I am aware that the information gathered during the course of the case study will be anonymised prior to inclusion in a report, but that a list of participating sites will be published.	

I agree to participate in research to optimise pharmacy training capacity by taking part in a structured group interview with the researcher.

Name of participant   Date   Signature

....

Name of researcher   Date

Lynne Bollington   June 2008

Managing preregistration training workload

Invitation to join a round table discussion for anyone involved in training or support for preregistration pharmacist trainees

A research project to investigate training workload for preregistration pharmacists is ongoing. This hospital has been selected as a case study site. The researcher will be visiting the site soon to talk to a number of people who are involved in preregistration training. As well as a number of formal interviews, the researcher would like to meet other staff who are interested in training for an informal discussion about the project and to hear views and ideas about how to manage trainer workload.

If you are involved, either directly or indirectly, in preregistration pharmacist training, then please come along to hear about the research and feed your ideas into the project.

Everyone is welcome.

Date:

Time:

Venue:

For more details, please speak to your local preregistration tutor or get in touch with the researcher directly (contact details below).

For more information contact:
Lynne Bollington: Lynne@Bollington.net Tel: 0041 22 700 4257

Appendix 26
Questionnaire about recommendations
Optimising Pharmacy Training Capacity
Questionnaire to Lead Preregistration Tutors

Name: .... Contact Telephone Number: ....

Trust: xxxx   Preregistration training site(s):   xxxxxx.....

Site code:
(N.B. Site code will be kept confidential but will enable you to compare your own site data with overall trends)

Section one: Organisation and staffing data

1   Hospital training site data
Please provide the following information about your hospital training site(s).

a) How many wards are there?	
b) How many in-patient beds are there?	

2   RPSGB accredited preregistration pharmacist managers and tutors
Please complete a separate row for each person who is actively working as a RPSGB accredited preregistration manager or tutor **for the 2008 – 9 cohort.**

Person	Is this person a RPSGB preregistration manager? (Yes/ No)	Number of contracted hours worked per week	What percentage of this person's time is dedicated to preregistration pharmacist training? (incl. admin as well as training time)	How many preregistration pharmacist trainees does this person formally tutor in the current cohort?
Tutor 1 (T1)				
Tutor 2 (T2)				
Tutor 3 (T3)				
Tutor 4 (T4)				
Tutor 5 (T5)				
Tutor 6 (T6)				

Please attach an organisational chart of the pharmacy department that shows the staffing structure and label the posts occupied by managers and tutors (i.e. T1 – T6) from the above table.

3   Preregistration pharmacist trainers
In addition to the people listed above, how many other staff are preregistration trainers for the 2008 – 9 cohort?

Number of trainers	
	.... (headcount)

*Guidance note: Preregistration trainers are defined as any member of staff (who is NOT a manager or tutor for this cohort) who has responsibility for a substantive element of the training programme (e.g. a rotation through a section, or supervising a substantive period (one week or more) of ward-based training). It does NOT include staff who have incidental contact with the trainee, or those who take the trainee for "one-off" visits or tutorials.*p.t.o.

Section two: Preregistration training practices

For each question, please select the answer(s) that best describe the practice at your site **for the 2008 – 9 cohort.**

1   Documents and pre-prepared training materials

Please indicate which of the following documents and training resources are provided for your trainee(s).

Documents and pre-prepared training materials	Tick all that apply
a) A rota that shows where each trainee is based each week	
b) Written objectives for each section of the pharmacy	
c) Written objectives for the ward-based rotations	
d) Written objectives for other planned visits (e.g. to other departments, cross sector experience)	
e) Access to at least one tutorial per month (e.g. on-site, off site or by video-conference)	
f) Documented activities for trainees to undertake independently (e.g. in a workbook or electronically)	
g) Documented activities for trainees to undertake whilst working in each area	
h) Other (please describe)	

2   The role of trainees during the preregistration training year

Please **ESTIMATE** what proportion of the trainees' time (as a percentage) is spent undertaking each of the following roles or activities **across the whole training year.**

	Undertaking activities where the trainee is **NOT** contributing to service delivery. E.g. reading, observation of others, shadowing, cross sector experience, simulation, attending courses, tutorials, meetings, assessments	Performing roles usually undertaken by a technician	Performing roles usually undertaken by a pharmacist (with appropriate supervision)	Other role (please state) ....
Proportion of time	%	%	%	%

Guidance note: If more than one trainee at the site, please estimate the average time for a typical trainee.

p.t.o.

3   The role of the trainees in each section of their training programme

Please **ESTIMATE** what proportion of the trainees' time (expressed as a percentage) is spent undertaking each of the following roles or activities **during each rotation:**

Rotation	Undertaking activities where the trainee is **NOT** contributing to service delivery. E.g. reading, observation of others, shadowing, simulation, tutorials, meetings, assessments	Performing roles usually undertaken by a technician	Performing roles usually undertaken by a pharmacist (with appropriate supervision)	Other role (please state) ....
Dispensary	%	%	%	%
Clinical	%	%	%	%
Medicines Information	%	%	%	%
Technical services	%	%	%	%
Quality assurance	%	%	%	%
Stores / purchasing	%	%	%	%
Other rotation (please state)	%	%	%	%

Guidance note: If more than one trainee at the site, please estimate the average time for a typical trainee.

4   The duration and number of clinical rotations

This question relates to substantial amounts of time that the trainee spends working on wards or in clinics, either alone, or when accompanying a pharmacist on their normal duties. It does **NOT** include one-off visits (e.g. during an orientation tour of the hospital) or short periods (i.e. 3 days or less) to observe specialist areas of practice.

In total, how many weeks does the trainee spend working on wards or clinics?	
How many wards and clinics does the trainee work on during their training year? (N.B. exclude one-off visits and short periods of observation as described above)	
Of these, how many wards does the trainee work on for **eight consecutive** weeks or more?	
What is the **maximum** number of weeks spent by the trainee working on any one ward?	
In total, how many weeks does the trainee spend working directly alongside their accredited RPSGB preregistration tutor on wards or in clinics?	

p.t.o.

5   Use of technical accuracy checking training programmes in the 2008 – 9 cohort

Which of the following statements about technical accuracy checking training programmes are true for trainees in the current cohort at your site?

Use of technical accuracy checking training materials	Please tick all that apply
No technical accuracy checking training materials are used at this site	
Trainees gather evidence using the original ACT (pre 2008) paperwork	
Trainees gather evidence using the new PACE paperwork	
Trainees take a technical accuracy checking test	
Trainees are interviewed about their experiences on completion of the programme	

6   Time taken to complete the technical accuracy checking training

In which month did the trainees start and complete (or are anticipated to start and complete) the technical accuracy checking programme?

	Trainee 1	Trainee 2	Trainee 3	Trainee 4	Trainee 5
Start month					
Finish month					

7   Use of the technical accuracy checking role after completion of training

Please indicate the approximate frequency that you anticipate trainees will perform the technical accuracy checking role after completion of their training.

Frequency	How often (do/will) the trainees work in a technical accuracy checking role once they have completed the training programme? (Please tick one)
Daily	
Weekly	
Fortnightly	
Monthly	
Less than once a month	
Never	

Are trainees included on the dispensary rota as technical accuracy checkers, once they have been accredited to check?	Yes / No (please circle one)

8   Clinical appropriateness of items being checked

What proportion of the time do you ESTIMATE that the trainees are challenged by a pharmacist about the clinical appropriateness of items they are accuracy checking?	%

p.t.o.

Section three: Issues relating to training capacity

1   The case studies conducted in 2008 highlighted a number of issues related to training capacity. For each finding, please indicate to what extent you agree or disagree that the statement is true for your site.

Issue	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a) Bottlenecks in the schedule, for example when several new trainees require dispensary training at the same time in the Summer, are a problem					
b) Automation has made it harder for new trainees to find work they can do in the dispensary without disrupting work flow					
c) Accredited checking technician (ACT) training (i.e. pre-2008 material) takes too long					
d) Accredited checking technician (ACT) training is NOT pitched at the right level for preregistration pharmacist trainees					
e) Trainers do NOT generally discuss preregistration training with their colleagues from other sections					
f) Trainers do NOT know where their contribution fits in with the rest of the preregistration programme					
g) There is NO in-house consensus about the overall purpose of the training programme					
h) There is a lack of clarity about the purpose of some of the elements of the training programme					
i) Most preregistration pharmacist trainees do NOT take enough responsibility for their own learning					
j) Preregistration pharmacist trainees generally make the transition from being a student to a professional rather late in the preregistration training year					
k) Preregistration pharmacist trainees struggle to develop the skills to deal with uncertainty (grey areas)					
l) Most pharmacists do NOT generally get involved in directing preregistration pharmacist trainees unless it is specifically their role to do so					
m) Prereg tutors do NOT have enough information about what training is happening in other pharmacy departments in Wales					
n) Prereg tutors would like to have greater access to shared training resources					

What issues, if any, other than those listed here, do you feel are important in relation to training capacity?

....

....p.t.o.

Section four: **Recommendations to optimise training capacity**

1   A number of provisional recommendations have been formulated with the aim of developing capacity or improving the quality of training. Please indicate the extent to which you agree or disagree with each recommendation.

Recommendation	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
a) Ensure that preregistration pharmacist trainees spend a significant amount of time (equivalent to at least 2 months) working directly alongside their RPSGB tutor in the clinical environment in an apprenticeship-style relationship					
b) Ensure that trainees undertake the Preregistration Accredited Checking Experience (PACE) training programme					
c) Aim to complete the PACE programme within the first 4 months of the year					
d) Ensure that once accredited, preregistration pharmacist trainees undertake checking of dispensed items on a regular basis					
e) Ensure that preregistration trainees are regularly coached and challenged by pharmacists about the appropriateness of the medicines they are checking					
f) Ensure that the purpose of each rotation that the trainee undertakes is made explicit					
g) Minimise the number and/or duration of rotations undertaken by preregistration trainees where they are NOT able to perform a hands-on role					
h) Maximise the number and/or duration of rotations that provide opportunities for trainees to spend time practicing roles usually undertaken by a pharmacist					
i) Ensure that the bulk of preregistration pharmacist training takes place in generalist areas					
j) Ensure that preregistration training is pitched at a level that is appropriate to the skills and experience of the trainees					
k) Hold a regular annual meeting with trainers from all sections to ensure that the aims and delivery of preregistration pharmacist training are aligned across the organisation					
l) Using existing resource and expertise where possible, collaborate between sites to build shared access to a programme of video-conferenced tutorials					
m) Use simulation software and Computer Assisted Learning (CAL) packages to provide resources that facilitate training and assessment of key skills and competencies					

p.t.o.

Section five: **Assessment of impact of the recommendations**

1   Please indicate whether each recommended action already takes place, or is planned to take place, at your site. ESTIMATE the impact that each recommendation, if fully implemented, may have on capacity and quality of training at your site.

Guidance note.   **Impact on capacity or quality of training – please score each using the following codes:**
1 = significant decrease, 2 = small decrease, 3 = no impact, 4 = small increase, 5 = significant increase

Recommendation	Does your site currently do this? Yes / No	Do you plan to implement any action to meet this recommendation in the next 12 months? Yes / No	Did the report "Optimising NHS Pharmacy training Capacity – Phase One" issued in January 2009 influence the decision to implement this action? Yes / No	Impact on capacity and quality of training. Please score each recommendation (from 1 – 5) (see guidance note above). What effect, if any, do you anticipate implementation of this action will/would have on:	
				Training capacity? (1 – 5)	Training quality? (1 – 5)
a) Ensure that preregistration pharmacist trainees spend a significant amount of time (equivalent to at least 2 months) working directly alongside their RPSGB tutor in the clinical environment in an apprenticeship-style relationship					
b) Ensure that trainees undertake the Preregistration Accredited Checking Experience (PACE) training programme					
c) Aim to complete the PACE programme within the first 4 months of the year					
d) Ensure that once accredited, preregistration pharmacist trainees undertake checking of dispensed items on a regular basis					
e) Ensure that preregistration trainees are regularly coached and challenged by pharmacists about the appropriateness of the medicines they are checking					
f) Ensure that the purpose of each rotation that the trainee undertakes is made explicit					
g) Minimise the number and/or duration of rotations undertaken by preregistration trainees where they are NOT able to perform a hands-on role					

Section five: **Assessment of impact of the recommendations (cont)**

1 (cont) Please indicate whether each recommended action already takes place, or is planned to take place at your site. ESTIMATE the impact that each recommendation, if fully implemented, may have on capacity and quality of training at your site.

Guidance note.   Impact on capacity or quality of training – please score each using the following codes:
1 = significant decrease, 2 = small decrease, 3 = no impact, 4 = small increase, 5 = significant increase

Recommendation	Does your site currently do this? Yes / No	Do you plan to implement any action to meet this recommendation in the next 12 months? Yes / No	Did the report "Optimising NHS Pharmacy training Capacity – Phase One" issued in January 2009 influence the decision to implement this action? Yes / No	Impact on capacity and quality of training. Please score each recommendation (from 1 – 5) (see guidance note above). What effect, if any, do you anticipate implementation of this action will/would have on:	
				Training capacity? (1 – 5)	Training quality? (1 – 5)
h) Maximise the number and/or duration of rotations that provide opportunities for trainees to spend time practicing roles usually undertaken by a pharmacist					
i) Ensure that the bulk of preregistration pharmacist training takes place in generalist areas					
j) Ensure that preregistration training is pitched at a level that is appropriate to the skills and experience of the trainees					
k) Hold a regular annual meeting with trainers from all sections to ensure that the aims and delivery of preregistration pharmacist training are aligned across the organisation					
l) Using existing resource and expertise where possible, collaborate between sites to build shared access to a programme of video-conferenced tutorials					
m) Use simulation software and Computer Assisted Learning (CAL) packages to provide resources that facilitate training and assessment of key skills and competencies					

Thank you very much for completing this questionnaire. If you wish to provide further details or clarification about your responses or have any comments on any element of this work, please use the next page.

Please include any further details or clarification about any responses to the questionnaire here. Indicate the relevant section and question number if appropriate.

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Do you wish to make any additional comments about this research?

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Thank you for completing this questionnaire.

Please return the completed questionnaire to lynne@bollington.net by 17th April 2009,
or, if you prefer, by post to: Lynne Bollington, 7 rue du Nant, CH-1207, Geneva, Switzerland.

Discussion paper to reach consensus

Consultation on final draft of recommendations

Education and training subgroup of WCP's committee
9th November 2009

Introduction
An objective of the Education and Training subgroup of the Welsh Chief Pharmacists' Committee is to undertake research to investigate the issue of training capacity. The purpose of this paper is to consult with members of the subgroup on a final draft of the recommendations that have been developed as a result of this research.

Recommendation development process
A series of case studies in NHS hospitals in Wales informed the development of recommendations for inclusion in a strategy *"that aims to optimise training capacity whilst sustaining or increasing quality"*. In March 2009 preregistration lead tutors at all 16 NHS pharmacy training sites across Wales were sent a questionnaire that asked them to indicate their agreement or otherwise with the draft recommendations using a Likert scale (strongly agree to strongly disagree).

All tutors agreed with three of the original thirteen recommendations (numbers 2, 6, and 9). In the case of the remainder, the relevant lead tutors were contacted by telephone to discuss the recommendations that they had not agreed with. In total, fourteen tutors were contacted to discuss between two and five recommendations each. Two tutors were in agreement with all of the original recommendations and so were not contacted again.

The discussion with tutors was used to establish the reasons for their non-agreement with specific recommendations and to identify whether revisions could be made that would make the recommendation acceptable.

The recommendations have now been revised in the light of the feedback received and are presented here for the Education and Training subgroup to consider. The changes to the recommendations have been underlined and further explanation provided. The subgroup is asked to consider the revised recommendations and the questions that accompany them in order to provide further feedback and comment. The recommendations will be presented to the Welsh Chief Pharmacists' committee in January 2010 as part of the final project report.

Summarised key to format of tables

Bold text – Revised recommendation
<u>Underlined text</u> – aspect of original recommendation that has been revised
Standard black text – comments and explanation
Standard red text - points for discussion where feedback is requested

Recommendations for action at Trust / site level

Recommendation 1

Ensure that the preregistration pharmacist trainees spend a significant amount of time (equivalent to at least 2 months*) working directly alongside <u>a pharmacist (ideally their RPSGB tutor)</u> in the clinical environment in an apprenticeship-style relationship.

*For the sake of continuity, one pharmacist for a 2 month period is advised. If two pharmacists are used, then it is essential that there is a comprehensive handover of information about trainee progress.

Comment / points to consider:
The original recommendation was for the tutor to spend time in this relationship with their trainee in order to be able to delegate appropriately and provide first hand feedback.
- Several tutors do not work in an appropriate clinical environment for this role
- A small number of tutors have more than one trainee and so workload is an issue
- Some sites have an apprentice-style model – but for shorter periods with consecutive trainers
- Some sites can't achieve the original recommendation now, but would aspire to in the future

Question for the subgroup to consider:
- Do you agree that this recommendation should be adopted?

Recommendation 2

<u>Continue to</u> ensure that preregistration pharmacist trainees undertake the Preregistration Accredited Checking Experience (PACE) training programme.

Comment / points to consider:
All sites in agreement and all were already meeting the recommendation

Questions for the subgroup to consider:
- Is use of PACE now so routine that it is unnecessary to include this recommendation?
- Do you agree that this recommendation should be adopted?

Recommendation 3

<u>Introduce</u> PACE in first 4 months of the training year <u>and aim for each individual preregistration pharmacist trainee to gain accreditation within 3 months of their start date on the programme.</u>

Comment / points to consider:
The original recommendation was for the PACE programme to be completed within the first four months of the year
- Views about whether this is achievable are shifting rapidly
- There are timetabling problems at sites with multiple trainees, so there is a need to stagger the target completion date for individuals
- Views differed about exact timings (e.g. introduce within 4 – 6 months, complete within 2 – 5 months of starting)
- Concerns were expressed about whether the target date was mandatory or something to aim for (e.g. what if the trainee made an error and there was undue time pressure to carry on without proper time for reflection?).

Questions for the subgroup to consider:
- Are the timings suggested in this recommendation appropriate?
- What happens to the trainee when/if they are not met?
- Do you agree that this recommendation should be adopted?

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Recommendation 4

Ensure that once accredited, preregistration pharmacist trainees undertake checking of dispensed items on a regular basis.

Comment / points to consider:
- One site needed clarification of the motive behind this – whether it was for trainees' benefit or to provide dispensary cover. The rationale is that trainees learn a lot from taking this responsibility.

No change – all sites now in agreement
Question for the subgroup to consider:
- Do you agree that this recommendation should be adopted?

Recommendation 5

Ensure that preregistration pharmacist trainees are regularly coached and challenged by pharmacists about the appropriateness of the medicines that they are checking <u>in all settings</u>.

Comment / points to consider:
The original recommendation did not state "in all settings"
- Most sites agreed with the original recommendation
- The case studies indicated that trainees are not being routinely challenged about prescriptions they are dealing with and are focussing on issues of accuracy
- There was concern about there being fewer dispensary-based pharmacists in a position to challenge
- The point was made that this won't affect capacity – but will improve quality

Questions for the subgroup to consider:
- Should these recommendations try to address issues of quality even if there is no obvious impact on capacity?
- Do you agree that this recommendation should be adopted?

Recommendation 6

Ensure that the purpose of each rotation that the preregistration pharmacist trainee undertakes is made explicit.

Comment / points to consider:
No change – all sites in agreement
Question for the subgroup to consider:
- Do you agree that this recommendation should be adopted?

Recommendation 7

<u>Limit</u> periods undertaken by the preregistration pharmacist trainees where they do not perform a hands-on role* <u>to a maximum of two weeks of in-house pharmacy rotations plus a total of 20 sessions (10 days) of short visits to specialist or non-pharmacy settings.</u>

* "Not performing a hands-on role" means rotations or short visits where the trainees' activities do not contribute directly or indirectly to patient care (e.g. observation, shadowing, reading and/or simulation exercises). Rotations where the trainee undertakes these activities during an introductory period prior to undertaking a hands-on role (under appropriate supervision) are excluded from this recommendation.

Comment / points to consider:
The original recommendation stated "minimize". This was too subjective and not measurable. "Not performing a hands-on role" needed defining.
- Suggestions for the maximum time spent on in-house pharmacy rotations ranged from 1 – 2 weeks (max three x 1 week rotations of this type was also suggested)

- Suggestions for time spent in short visits to specialist and non-pharmacy areas "for interest or information only" were one or two sessions per area, max time ranged from 10 – 20 half days in total

- Is the definition of "not performing a hands-on role" now clear?
- Are the time limits in this recommendation appropriate?
- Do you agree that this recommendation should be adopted?

Recommendation 8

Ensure that preregistration pharmacist trainees spend at least 50 % of their time performing roles undertaken by a pharmacist (under appropriate supervision).

Comments / points to consider:

The original recommendation stated "maximise the number and duration of rotations". This was not measurable. Comments received included:
- There should be at least some part of every day where this happens
- Trainees shouldn't spend a lot of time working as a technician on a regular basis – by the last 3 months, should be spending at least 70 % of their time doing pharmacist roles
- The questionnaire responses indicated that trainees currently spend between 10 – 50 % (mean 23.3%) of their time performing roles undertaken by a pharmacist.

Questions for the subgroup to consider:
- What is the minimum proportion of a preregistration pharmacist trainee's time that should be spent practising doing things that a pharmacist does (averaged across the year)?
- Do you agree that this recommendation should be adopted?

Recommendation 9

Ensure that the bulk of preregistration pharmacist training is undertaken in generalist areas.

Comment / points to consider:

No change – all sites in agreement

Question for the subgroup to consider:
- Do you agree that this recommendation should be adopted?

Recommendation 10

Ensure that preregistration pharmacist training is pitched at a level that is appropriate to the skills and experience of the trainees.

Comment / points to consider:

- One site needed clarification of rationale for inclusion in the recommendations (which was to ensure that the trainees are given sufficient responsibility and that there was an emphasis on skills development rather than on building clinical knowledge).

No change – all sites now in agreement

Question for the subgroup to consider:
- Do you agree that this recommendation should be adopted?

Recommendation 11

Hold a regular annual meeting with trainers from all sections to ensure that the aims and delivery of preregistration pharmacist training are aligned across the organisation.

Comment / points to consider:
- There was some concern about inviting trainers who work at sites remote from the main training base to a meeting. All should be invited, but if attendance is not possible, meeting notes could be sent.

No change – all sites now in agreement

Question for the subgroup to consider:
- Do you agree that this recommendation should be adopted?

Recommendations for action at an All-Wales level

Recommendation 12

Develop an All-Wales database of in-house tutorials where training materials have been prepared and may be suitable for delivery at other sites. Investigate methods of facilitating access to the materials in manner that is efficient, equitable, ensures that the materials remain up to date and gives full recognition to the authors of the original work.

Comment / points to consider:
Original recommendation was to develop access to a programme of video-conferenced tutorials. This may not be achievable yet although the principle of sharing resources appears acceptable to all.
- Most respondents were unfamiliar with video-conferencing technology and are sceptical about its value
- Several tutors would like to gain wider access to tutorial materials
- Many tutors expressed a willingness to identify some of their existing presentations and teaching materials that would be suitable for sharing
- Work needs to be done to identify a way of enabling sites to contribute, update and access materials (or a list of materials) using a secure, shared database
- The possibility of access to video-conferenced tutorials (whether live or recorded) should not be ruled out – particularly for sites that are geographically remote

Question for the subgroup to consider:
- Do you agree that this recommendation should be adopted?

Recommendation 13

Use simulation software and computer assisted learning (CAL) packages to provide resources that facilitate training and assessment of key skills and competencies <u>in topics where the content of training is standard and is delivered frequently to successive trainees</u>.

Comment / points to consider:
- There were some concerns about computer-based learning (CBL) not being as good as real experience
- CBL may be too black and white for teaching in areas that require discussion
- CBL can take up a lot of tutor time – possibly defeating the object by reducing capacity
- Limited use of CBL could be made of the technique in areas that are trained or assessed repeatedly and content is standard (e.g. dispensing, PACE assessment, calculations)

Question for the subgroup to consider:
- Do you agree that this recommendation should be adopted?

Summary

Members of the Education and Training subgroup and their colleagues within departments across Wales have provided detailed information and advice throughout the various stages of this project. Their help and support has been invaluable and is greatly appreciated.

The Education and Training subgroup are being offered an opportunity to comment on the final draft of the recommendations prior to them being presented to the Welsh Chief Pharmacists' committee in January 2010 for their consideration.

A discussion about the recommendations based on the questions raised in this paper will take place at the meeting of the subgroup in order to provide a final opportunity for feedback to the researcher.

Questions for the Education and Training subgroup

1 Are there any specific comments that the subgroup would like to make about individual recommendations?
2 Are there any general comments about the recommendations?
3 Are members of the subgroup willing to endorse the recommendations and advise the Welsh Chief Pharmacists that these should be adopted in a strategy for use in Wales?
4 How do you envisage the recommendations being used?
   - Should the recommendations be achievable now or something to aspire to in the future?
   - Should the recommendations be voluntary or mandatory?
   - What happens to the site when/if they are not met?
5 What next steps will you take – in-house and at an all Wales level?
6 Are there any further comments?

Lynne Bollington
Researcher
October 2009