



Royal  
Pharmaceutical  
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# Healthcare Professional Education & Training: How does Pharmacy in Great Britain compare?

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## **1. Introduction**

### **1.1 Models of healthcare education in the UK**

The recognition of the poor correlation between academic achievement and performance in professional role, together with a need to ensure consistency in standards of professional practice have resulted in competency based training and assessment becoming the norm for all healthcare professionals in the UK (Table 1) and pharmacists internationally (Table 1.2). Competency based training, forces the assessment of clinical skills, attitudes and behaviours in addition to knowledge, which is assessed by traditional assessment methods.

It can be seen from Table 1.1 that even within the UK there are significant differences between the healthcare professionals in terms of where responsibility for competency development and assessment lies and at what point the education process is driven by the competency framework. In all cases, preparation for the provisional registration of doctors and full registration of dentists and veterinary surgeons is the responsibility of the graduating university. For Optometry & Pharmacy the university curriculum provides the first stage of the student development with independent work-based training the second. The General Optical Council provides a list of competencies which undergraduate students must have achieved before entry into their work based training and those students who under perform in their university degree have to pass an additional independent competency based assessment before being allowed to proceed. Whilst UK undergraduates are expected to pass a practical assessment in their ability to dispense a prescription legally, accurately and safely within the latter stages of their degree this task represents only one of multiple competencies that a practising pharmacist requires.

The models of education and training of Australian & New Zealand pharmacists are most similar to those of the UK, with responsibility for competency development largely being left to the postgraduate work-based experience (pre-registration training). Within the USA and Canada, clinical experience gained during the undergraduate programme contributes to a greater or lesser extent to the registration requirements and consequently the competence development is a partial responsibility of the Universities. The recent review of pharmacy education in the UK conducted by Aston University, identified a disparity between the expectations of pre-registration trainers and the abilities of university graduates [1]. This disparity is predictable and unavoidable whilst schools of pharmacy in the UK are provided with minimal guidance as to the expected competences of their graduates.

### **1.2 The problem with competence and competency**

Competence can be defined as the ability to do something to a set standard i.e., 'can do', whereas 'competency' relates to the ability to do something in role in a variety of settings and repeatedly i.e., 'does do' [2]. The 'competence' led approach to registration is not, however, universally welcomed with some describing it as overly simplistic and reductionist in its approach [3]. Furthermore 'with the focus of the competence approach on skills and attitudes rather than a solid understanding of the basic concepts and principles "education" may give way to "training" [3]. (NB: The General Optical Council seem to have already accepted this by describing the undergraduate experience as 'training' and not 'education' [4]). A perhaps more significant issue concerns the validity of competence assessment and the identification of the standard at which competence can be described as being achieved. As Norris has argued, 'there is a mismatch between the appealing language of precision that surrounds competency or performance based programmes and the imprecise, approximate and often arbitrary character of testing when applied to human capabilities' [5].

**Table 1.1 Accreditation criteria for different healthcare professionals in the UK & their relationship with the Undergraduate education**

Healthcare professional	No. years to graduation	Curriculum requirements	Competency framework type Task-based / Generic / Holistic	Where graduation does not lead to full registration			Comments
				No. years to register	Curriculum type	Task-based / Generic / Holistic	
Pharmacy	4*	Outcomes?	-	1	Competency	Task-based	The current accreditation criteria requirements for a pharmacy degree curriculum are largely immeasurable outcomes and not competences
Medicine [6]	5+	Competency	Holistic?	2	Competency		Competency framework is mainly task-based but includes significant numbers of generic competences
Dentistry [7]	5	Competency	Task-based				Specific learning outcomes are listed as either 'competent', 'have knowledge of' or 'be familiar with'
Optometry [4]	3*	Competency	Task-based	1	Competency	Task-based	Competency assessment at the end of the university degree for students who underperformed in their degree
Veterinary practice [8]	5	Competency	Task-based				

\* One school of pharmacy and optometry currently incorporates the additional one year work-based experience into their undergraduate degree programme.

+ Medical graduates are given limited responsibilities on graduation (provisional registration). They are required to undertake two further foundation years with close supervision in accredited training places before obtaining full practising rights.

**Table 1.2 Accreditation criteria for pharmacists in UK, Australia, New Zealand, USA & Canada**

Country (state)	No. years to graduation	Undergraduate curriculum design	Practice time required for registration	Pre-graduation practice time contributing to registration	National pre-registration assessment	State or local pre-registration assessment	Clinical placement tutor requirements for training post-graduation
UK	4*	Outcomes* + indicative syllabus - undergraduate. Competency framework for registration.	1610-1932 hours <small>35 to 42.5 hrs per week for 46 weeks per year</small>	0 hours	80 MCQs - Open book 1 x 2.5 hours (20 calculations) 90 MCQs - Closed book 1 x 1.5 hours	Tutor undertakes 4 staged assessments with trainee to ensure trainee is meeting performance standards.	3 years post-registration experience in relevant sector.
USA (USA 1)	6	Knowledge, attitudes & skills – Competency based	1500 hours	600 hours	185 MCQs– scenario based, 150 used, 35 pre-test <sup>~</sup>	Jurisprudence (Local law & regulations)Exam 90 MCQ– scenario based, 75 used, 15 pre-test <sup>~</sup>	Unknown
USA (USA 2)	6	Knowledge, attitudes & skills – Competency based	1500 hours	1500 hours	185 MCQs– scenario based, 150 used, 35 pre-test <sup>~</sup>	Jurisprudence Exam 90 MCQ– scenario based, 60 used, 30 pre-test <sup>~</sup>	Unknown
Canada	6	Knowledge, attitudes & skills – Competency based	980 hours	560 hours	Pharmacy Examining Board of Canada (PEBC) Exam 300 MCQs (100 pre-test) in 2 sittings 16 workstation OSCE.^	2.5 hours Jurisprudence MCQ based exam	Unknown
Australia	4	Unknown – Competency framework developed for practising / registered pharmacist	2280 hours#	456 hours	None	2 hour Written exam in law & calculations & a 1 hour oral exam in law and practice	Unknown
New Zealand	4	Unknown - Competency framework developed for practising / registered pharmacist	1600 hours	0 hours	None	None	3 years post-registration experience and undergone the requisite compulsory training.

\*The current accreditation criteria requirements for a pharmacy degree curriculum are largely immeasurable outcomes and not competencies

# 114 hours must be with an approved preceptor

^ Twelve or thirteen stations are interactive and involve one of the following:

- a “Standardized Patient” (SP)
- a “Standardized Client” (SC), [e.g. a parent or caregiver] or
- a “Standardized Health Professional” (SHP)

~ not used to determine student competence, but to pre-test questions for appropriateness

### **1.2.1 Reducing professions to a list of tasks**

The criticisms about reductionism may be well founded if the conceptual development of the competency framework is 'task based', rather than formulated on 'generic attributes' and holistically defined in context' [9]. The 'task based' framework reduces a profession's competency to a list of tasks that must be performed to undertake the role safely, whereas a 'generic attributes', as its name suggests, focuses on those general abilities and qualities associated with proficient or expert performance. This latter approach, though laudable, is however, not context specific and therefore creates difficulty for a learner to identify which tasks they perform are related to the generic attributes they are required to demonstrate. It is therefore believed that a 'holistically defined in context' framework which places generic attributes in context may form one response to the criticism of reductionism [2]. When considering the types of competency frameworks currently utilised by the healthcare professions in the UK (Table 1.1), it can be seen that invariably they are task based and the criticism of reductionism may seem appropriate. Within curricula accreditation documents however, the list of knowledge, skills and attributes are generally prefaced with a statement which generally states that the list is not exhaustive or meant to stifle development. Furthermore, practitioners are expected to competently perform tasks related to their role and demonstrate skills outside of the list provided.

### **1.2.2 Theory and practice?**

Competences are the things that practitioners need to know and be able to do to perform the occupational role. Incorporating competence-based assessment into an undergraduate curriculum will require greater attention to professional role and practice. The more undergraduate education is structured by professional and practical considerations, the more likely it is that concerns will be raised about lack of attention to the theoretical knowledge that is thought to underpin the profession. Interestingly, research to consider the integration or separation of 'science' and 'practice' is rather rare, with only one paper found on the topic. The research found, via a controlled trial, that integration of 'science' and 'practice' significantly improved outcomes with the practice exams, had no effect on outcomes in the scientific exams and significantly improved attitude to science [10].

Tensions between theory and practice, between technical knowledge and practical knowledge and between formal knowledge and tacit knowledge are all too familiar ones in professional education and training. Clearly formal knowledge and understanding are critical dimensions of professional action, but knowledge derived from and through practice, practical and tacit knowledge are also central to professional expertise. Too sharp a distinction between theory and practice in training often results in problems of application and a lack of understanding of the contexts of professional action. It is one thing to know and another to do. The relationship between theory and practice in professional training is often thought about as a question of curriculum integration. How should learning be organised so that students gain the necessary theory and practical experience, understand the relationship between the two in the context of professional practice and can be certified as competent and fit to do the job?

### **1.2.3 Defining the competence standard**

The concerns outlined by Norris regarding the arbitrary setting of a level at which competence is demonstrated, have been acknowledged. Medical educationalists seem to accept this criticism and choose the pragmatic approach of using recognised experts to define the level at which competence is achieved [11].

Of perhaps more concern is the disparity between criterion-referenced competence assessment methods and traditional norm-referenced university assessments. The pass level for criterion-referenced assessments of competence such as Objective Structured Clinical Examinations can be variable [12], requires a great deal of consideration [11], and is generally set much higher

than the traditional university pass levels of 40 or 50%. The requirement of undergraduate degree curricula to be competency based therefore creates an obvious difficulty if the award is to be a classified degree.

### **1.3 Assessing competence**

Stern *et al.* used an international network of medical education experts to identify the most appropriate method for assessing 60 competence-based outcomes identified as Global Minimal Essential Criteria for medical practitioner competence [13]. 75 different assessment tools were considered by the expert panel which identified that 36 competences could be assessed via multiple choice question exam (MCQ), 17 by using a 15 station objective structured clinical examination (OSCEs), 14 by observer rating and 4 by logbooks. None of the other 71 assessment tools were identified as preferable to those chosen.

The delineation of 'work-based' and 'workplace' assessment [2] was not considered by the team of experts. MCQs & OSCEs could be considered to be 'work based' assessments whereas observer rating and logbooks are 'workplace' assessments. The suggested main methods of assessment by Stern *et al.* were therefore focused primarily on identifying whether the professionals 'can do' tasks rather than on how well they 'actually do' tasks in practice.

#### **1.3.1 Multiple choice examinations**

Multiple choice questions (MCQs) are increasingly used in Higher Education due to their ability to test multiple levels of cognitive ability (knowledge, comprehension, application & analysis [14]). It is therefore unsurprising that Stern *et al.* identified MCQs as appropriate for assessing all knowledge based competencies, some skills e.g. numeracy and some attitudes [13]. The use of profession specific scenarios and possible solutions in the format of MCQs enables the assessment of student ability to apply knowledge or analyse situations and provides a response to the often cited criticism that MCQs only assess knowledge [14].

MCQs have also been criticised for assessing recognition rather than recall and that by allowing the student to choose an answer from a list of options, success by guessing may provide an unrealistic impression of ability. MCQs can also provide answers or options that the student would not have otherwise considered and thereby unwittingly gift them the solution. The use of extended matching questions where the number of possible responses is extensive e.g. more than 10, is one format which addresses some of these criticisms, as are penalties for incorrect guessing and by providing quality distracters in the choice of answers. Such criticisms are however important when considering the appropriateness of this method of assessment in assessing competence. All these points have been very carefully considered by the RPSGB Boards of Examiners whom remain satisfied as to the validity and integrity of the MCQ format.

#### **1.3.2 Objective structured clinical examinations**

An OSCE has been described as 'an approach to the assessment of clinical competence in which the components of competence are assessed in a planned or structured way' [15]. The focus of the OSCE is on the 'doing' rather than 'the knowing' and its popularity as a clinical assessment tool has increased due to its ability to assess a 'wide range of skills and behaviours under varying degrees of difficulty and complexity' [16].

OSCEs traditionally consist of a large number of workstations (8-18) each of which take between 5 & 15 minutes to complete and can be either written or performance related, using an examiner and either a patient, simulated patient or piece of equipment [16], [17], [18]. As experience in the use of OSCEs has increased their reliability and validity has been extensively reviewed. OSCE reliability (reproducibility) is believed to be improved by increasing the number of stations, ensuring homogeneity of tasks at different workstations [19], use of checklists rather

than rating scales, standardised training of patients, a minimum of 3-4 hours testing time, performance based stations as opposed to paper based stations and norm-referenced scores (grading students against their peers i.e. thus ensuring that the student profile adheres to a normal distribution) as opposed to criterion referenced (grading students against set criteria) [20]. With the narrower range of marks usually attributed using norm-referenced assessment it is unsurprising that this method is more reliable, however Medical educationalists believe that criterion referenced assessment of OSCEs is preferable. It is impossible to achieve a high degree of reliability if each competence is assessed only once in a digest of OSCE workstations and therefore repeat workstations assessing the same or similar competence are required. This approach however, results in OSCEs with a requirement for very large numbers of workstations and consequently, duration of testing time.

The alternative approach is to break each OSCE workstation down into their component parts or generic skills [21] e.g., data gathering, verbal communication, non-verbal communication etc. and to construct the exam to ensure that each component is assessed on a number of occasions via the different workstations [18], [22]. Reliability of the OSCE was shown to be much better when the number and content (components) of stations are taken into account [19].

Validity is not a property of tests or examinations, it is a property of the inferences or judgements made on the basis of tests or examinations [23]. In considering whether OSCEs can provide a basis for sound judgements about likely future performance a number of different concepts of validity have been used, for example, content, concurrent and construct validity. Content validity refers to the extent to which a test covers an appropriate (and preferably weighted) sample of those things that pharmacists need to know and be able to do. It addresses the question of whether the test is a good sample of the domain of clinical action and decision-making it is meant to represent. Clearly careful thought must be given to the number and specific attributes of each OSCE station to ensure that they properly represent the target domain of practice. Concurrent validity usually refers to extent to which scores on the test in question are correlated with scores on other assessments or tests. In the case of OSCEs this might be correlations with examination scores or assessments of trainees in practice-based settings. The key idea behind concurrent validity is that we can learn something about the properties of the outcomes of a test by comparing it with the outcomes of others tests. Construct validity is arguably the most important consideration in considering the extent to which OSCEs provide the basis for sound judgements about performance. Messick argues that at its simplest 'construct validity is the evidential basis for score interpretation.' The question prompted by a consideration of construct validity concerns the extent to which an OSCE produces evidence (often in the form of scores) that provides the basis for making sound inferences about the construct of clinical competence.

With the evidence based requirements for ensuring reliability and validity, the main drawback of OSCEs has been identified as their resource intensity [22]. The organisation and cost of multiple workstations with examiners and trained patients in place to assess for extended periods of time has to be balanced against the education benefits and value of the outcomes.

Hodges [24] highlights other drawbacks with OSCEs which clinical educators seem to have either 'glossed over' and / or failed to provide an appropriate response to. Firstly, the context or environment in which OSCEs are undertaken generally bare little resemblance to the context under which the task is usually undertaken. Consequently, although by passing an OSCE a student may have demonstrated that they can perform those tasks in an artificial environment, it may not reflect their ability to perform that task under different pressures, state of mind or with different resources available. Conversely, a student failing an OSCE due to examination nerves may actually perform that role in practice regularly and competently.

One example cited by Hodges is the 'total lack of other healthcare professionals in OSCE scenarios', which is incongruous as 'more and more curricula emphasize the delivery of healthcare in a team'. In reality, any healthcare professional will have a number of colleagues

from whom guidance can be obtained and checks on work can be made. Although it may not be too difficult to enable other healthcare professionals to be available within OSCE workstations it may create difficulties in identifying how much of the final decision made was by the student being assessed and how much by the supporting healthcare professional.

Hodges also notes that student performance in each workstation is affected by what they believe is the focus of the assessment i.e., they change their performance to meet the perceived assessment criteria, and consequently their assessed performance does not provide a realistic insight into what they would actually do in practice [24]. Finally, Hodges states that OSCEs, viewed in the cold light of day, are basically one large performance by patients and students. OSCEs may therefore inadvertently measure the student's acting ability rather than their professional ability; hence favouring the more gregarious students.

These latter points are perhaps the main argument for workplace rather than work based assessment made by Swanwick & Chana [2]. Their view is that assessment and teaching should be coupled and that assessments such as OSCEs are 'bolt on' extras at the end of a learning experience. Furthermore, assessment is much more valid the closer it gets to the activity one wishes to assess. Consequently, assessment of performance of the activity in the workplace will provide a much better measure of ability than assessment of the performance in an artificial environment. A university degree with only limited opportunity for clinical training would be limited to work-based assessments only and as such may be able to develop basic clinical skills and only superficially prepare students for performance in a real world environment.

There does however, seem to be uniformity in the belief that OSCEs play an important and useful role formatively i.e., in developing practitioner skills, and are therefore an entirely appropriate tool for preparing students for their practical training. Their role in summatively assessing competency must however be considered in light of their artificiality and the negative effect that formal examinations have on practitioner or student ability to perform.

### **1.3.3 Portfolio based learning and assessment**

A portfolio is described as a collection of a learner's work which can be used to demonstrate development over a period of time and capacity to reflect on this [14]. Portfolio assessment which is described as 'authentic assessment' (Workplace rather than work based) and has been introduced to give learners more autonomy in their learning, develop 'deep learning' and to impact on their behaviour, intuition & learner performance [25]. It is however, one objective tool that can be used to assess competency rather competence and for this reason has gained favour amongst medical educationalists.

The one-off nature of most assessment methods provides only a snapshot of the student's ability and as discussed earlier, provides a limited picture of student performance in practice. Furthermore, due to the relative importance of one-off assessments, students focus their learning to the assessment period and thereby adopt a 'surface learning' approach. Portfolios enable students to provide a variety of performance-based evidence over a period of time and to demonstrate achievements of learning outcomes at a pace suitable to their needs. It is believed that by giving responsibility for learning to the student and enabling them to reflect, plan and practice, learners develop a 'deep learning' approach.

Examples of work that can be included in a healthcare professional's portfolio include [25]:

- Critical incidents of patient events
- A reflective journal or diary
- Routine clinical experiences
- Exam preparation material

- Video recordings of consultations
- Audits and project work
- Critical reviews of articles
- Feedback material
- Management material

It can be seen that most of this evidence is from the workplace, will provide an accurate picture of practice and overcomes the criticisms levied at OSCEs. It is, however, believed that without the student including some form of reflection and running commentary on the evidence presented, 'the document becomes a scrapbook rather than a portfolio' [26]. Personal learning plans are usually included with reflective essays as it is performance against this plan that is frequently considered within the essay, thereby completing one learning cycle.

In order to facilitate the production of a personal learning plan and enable students to demonstrate development over time, some schools also include a 'Clinical Problems list' [27] (Presentations) on to which the student can map their development. This is also similar to the approach used by the Royal Pharmaceutical Society of Great Britain (RPSGB) for pre-registration training, whereby students collate evidence and map it to a log of performance standards that must be met to successfully complete the training period.

With the inclusion of clinical problem lists and detailed guidance regarding the evidence that must be provided, the distinction between a log book and portfolio becomes blurred. Snadden argues that without the reflective element a portfolio becomes a log book and the collation of a prescribed list of tasks a meaningless chore as the reflection provides the defining purpose of the exercise [25]. Furthermore, without freedom to include evidence of the student's choice, the portfolio becomes a collection of coursework rather than a personalised portfolio.

Davis *et al.* who provided a long list of tasks and items which had to be included in an undergraduate medical student portfolio, for use summatively, received generally negative responses from students about the process of portfolio preparation with more than one student stating that the 'demands of completing the portfolio led to their deskilling in clinical competencies' [27]. One of the conclusions of the report from Davis *et al.* was to reduce the amount of directed coursework in the student portfolio and increase student freedom in their selection of evidence.

The RPSGB pre-registration training workbook and portfolio is therefore in effect a log book, which allows trainees to collect their own evidence. Although planning and reflection is encouraged within this process, there is no formal requirement of this and no external independent assessment of the quality of the evidence or the logbook itself.

Although supported by educational theory, the evidence for the effect of portfolios on learning by healthcare professionals is limited. Melville *et al.* found that after two years of using portfolios students were better at presenting the evidence but no better with respect to the quality of the evidence [28]. The researchers concluded that longer term studies were required to establish whether portfolio assessment positively influences learner behaviour.

It is perhaps the use of portfolios summatively that is currently creating the greatest difficulties for educationalists. The reliability of assessing a variety of evidence against a wide variety of learning outcomes can only be achieved with a large number of assessors taking a considerable amount of time each over the assessment process with between 3 or 4 independent assessors required [29], [28]. Furthermore, it is not uncommon to complete the assessment process with a meeting between the student and assessors [27] to confirm the authenticity of the work presented, clarify inconsistencies / ambiguities and check student understanding. Such an assessment method is therefore considered very resource intensive [25] and can only be justified if believed (demonstrated) to be valid.

When portfolios are compared with traditional assessments of medical competency, i.e., record of in-training assessment (RITA) interviews (expert panel review of student assessments and achievements since last review which includes the student), correlation has been found to be poor [28, 29] and consequently has led researchers to state that portfolios have a role as part of the triangulation process i.e., together with OSCEs and RITAs, but have limited validity and therefore should not be used 'as a sole method for high stakes single-instance assessment' [28].

Webb *et al.* believe that the 'value of the portfolio lies in the process, rather than in the end product itself' and that 'it is unlikely that the student would fail the portfolio itself', but the process would ensure that coursework is submitted to a pass level [30]. Davis states that portfolio assessment 'provides a powerful approach to assessing a range of curriculum outcomes not easily assessed by other methods' [27] and probably explains why Stern *et al.* chose a log book approach as the only method appropriate for assessing some of the global minimum essential competencies [13].

#### **1.3.4 Observer assessment of competency**

The 14 competencies identified by Stern *et al.* as measurable by 'observer rating' [13] largely consist of 'professional values, attitudes, behaviours & ethics, communication and critical thinking skills'. OSCEs, MCQs and portfolios would be inappropriate for assessing attitudes such as 'respect', 'altruism', 'empathy' & 'honesty' and therefore assessment by the placement tutor whilst observing the students in practice is the only reasonable option.

The reliability of observer assessment of competency is difficult to ensure due to differences in what different observers believe to be competence (inter-observer variation), differences in an observer's performance from one situation to another (intra-observer variation) and differences in the student performance from one task to another, even if they test the same competence. Southgate [31] also identified that 'establishing the reliability of assessments of performance in the workplace is difficult because they rely on expert judgements of unstandardised material'.

Baker *et al.* [32] state that reliability in workplace assessment can be maximised by:

- Specification – of standards, criteria and scoring guides
- Calibration – of assessors and moderators
- Moderation – of results, particularly those on the borderline
- Training – of assessors, with retraining where necessary
- Verification and audit – through quality assurance measures and the collection of reliability data

A review of the processes used by other UK healthcare professionals and pharmacy schools internationally to ensure reliability in workplace assessment by placement tutors will be useful to compare with current UK pharmacy practice which largely currently falls under the auspices of the Royal Pharmaceutical Society.

#### **1.3.5 Quality assurance of placement training**

The UK Quality Assurance Agency (QAA) provides guidance to Universities with regard to placement learning and provides useful yard sticks by which the quality of placement learning can also be compared.

QAA guidelines include [33]:

- Placement providers should be made aware of their responsibilities for:
  - the provision of learning opportunities;

- their role, where appropriate, in the assessment of students; and
- the health and safety of students.
- Students being made aware of their responsibilities for:
  - recording their progress and achievements and the means for recording them.
- Institutions should monitor and review the effectiveness of their policies and procedures in securing effective placement learning opportunities.
  - encouraging placement supervisors and students to provide feedback on progress and communicate any concerns in a timely way to the institution;
  - periodically reviewing the progress of students;
  - using feedback from institutional placement staff, placement supervisors / mentors, external examiners and students;
  - establishing procedures within which feedback on the quality and standards of the placement can be received and appropriate action taken where necessary; and
  - formal and informal means of gathering feedback from placement providers about the placement arrangement

There are currently no requirements for the development or assessment of competence of placement providers for providing training and assessment. A recent round table discussion held within the QAA however concluded that 'the guidance on staff development would benefit from being strengthened and should include the identification of competence requirements of staff' [34].

More recently Skills for Health, under a service level agreement set up with the Department of Health, has developed interim standards for quality assurance of healthcare education [35]. The standards are designed to be used by education commissioners when purchasing programmes for the healthcare professions under the remit of the Health Professions council, nursing and midwifery council and British Psychological Society and consist of seven requirements:

- Diversity, values, beliefs and safety
- Improving and maintaining quality
- Resources, management and governance
- Teaching and learning
- Student/learner selection, progression and achievement
- Student and learner support
- Assessment

Although these standards are not directly relevant for pharmacy education in the UK, in essence the guidance is very similar to that outlined by the Quality Assurance Agency with process transparency, monitoring and feedback processes all prioritised.

Within 'Student/learner selection...' education providers are required to 'ensure that sufficient, appropriately trained and experienced practice supervisors/mentors are available to support the management of student/learner performance and achievement of professional and inter-professional learning.' As with the QAA the guidance provided regarding the training and experience of practice supervisors is poorly defined with 'appropriate' being open to wide interpretation.

#### **1.4 Problem based learning (PBL)**

Problem based learning is a method of teaching which originated in the medical and healthcare context within the 1960s. The benefits of such an approach to learning have been extensively listed in the literature as [36], [37]:

- Fostering a deeper learning approach

- Promoting more versatile studying methods i.e. more likely to use library & library resources to study
- Developing greater retention and recall skills
- Demonstrating greater stronger knowledge application skills

Interestingly, PBL is not believed to be any more useful than traditional teaching methods in developing competence in problem solving [38]. Problem solving is largely dependent on knowledge and is thereby primarily improved by any means of improving knowledge.

Van der Bossche found that if the whole curriculum is PBL based, then it is likely that conventionally trained students will have covered, or have been introduced to, more knowledge and facts than PBL-trained students [39]. The large knowledge base required by healthcare professionals leads to concerns regarding over reliance on this teaching method. The debate as to whether whole or part of medical curricula should be PBL based will only be determined when adequate research has been undertaken.

Albanese and Mitchell identified that students who are taught solely via PBL may become too dependent on a small-group environment and lack the confidence to make decisions themselves [36]. This 'negative' result may actually be positive for the development of healthcare professionals who too readily make decisions without consulting with their peer group, different healthcare professionals and supervisors.

The wide adoption of PBL by the medical profession demonstrates the importance placed on skills developing i.e., the ability of doctors to apply their knowledge rather than just reproduce it. It could be argued that the competency based curricula of all healthcare professionals should also be designed to develop these students' skills. A review of the use of PBL within other healthcare professionals in the UK and pharmacy internationally may be useful to identify whether pharmacy in the UK should also be considering more widely adopting this teaching method.

## **1.5 Professionalism**

Professionalism is defined as the extent to which an occupation or a member of that occupation exhibits the characteristics of a profession. Student professionalism or professional competence is frequently described in terms of behavioural attributes e.g., reliability, active learning, communicating respectfully and articulately, accepting and applying constructive criticism, behaving ethically, demonstrating a desire to exceed expectations and putting others needs above ones own [40]. It is in fact a 'complex composite of structural, attitudinal and behavioural attributes' [41] and consequently the development and assessment of student professionalism as a 'competence' creates a variety of difficulties for educationalists.

A review of methods used to assess professionalism within medical education identified eighty-eight different reported assessments which could be broadly and arbitrarily classified into ethics (morality, ethical principles, honour codes, social norms, deception, abuse, cheating, disclosure & sexual misconduct), personal characteristics (emotional intelligence, values, empathy, trustworthiness, cynicism & dogmatism), comprehensive professionalism (more than one component of professionalism in the same assessment) and diversity (cultural issues, socioeconomic status, gender, age or disability). Each of these four sections were then further subdivided into affective (attitude), cognitive (reasoning), behavioural (behaviour) and environmental (effect of environment), with the instruments used varying from self-completed questionnaires, structured interviews to patient completed questionnaires regarding the professional themselves. Many reported tools were new and consequently their validity and reliability had not been established. With 16 different domains arbitrarily identified it can be seen that a considerable amount of work is required before a universally accepted description of what constitutes assessment of healthcare professionalism is identified.

Researchers have however identified that students learn most about professionalism from role models [42], focused teaching can improve moral reasoning [43] and that the environment in which the student is based also has a significant effect on their professionalism [44]. Furthermore the wider the variety of environments and greater the number of assessors the greater the reliability of the assessment will be [45]. It is therefore accepted within the medical literature that professionalism should be assessed and engendered from the first year of a medical student's undergraduate career. This not only gives time for their moral reasoning and professional attitudes to be developed but also ensures that students are prepared to address ethical issues in clinical settings.

In 1993 a recognised need to engender professionalism within undergraduate pharmacy students in the USA resulted in a cross party task force to address the issue. One of the main outcomes from this task force was a pledge of professionalism which is undertaken by students on entering the undergraduate experience. Other initiatives included 'professionalism tool kits' to help schools create professionalism initiatives at their schools, development of student practitioner relationships (where practising pharmacists acts as mentors to undergraduates) and devotion of an entire issue of a national student magazine to the topic.

Significant barriers to engendering professionalism within students have however been identified and these range from academics within academic institutes providing poor role models, the conflict created by commercial pressures within commercial institutes and unfortunately a lack of evidence for what exactly works [41].

Unlike the pharmacy pre-registration year, where expected standards for pharmacy trainee behaviour are outlined throughout the performance standards, there is currently no requirement for engendering student professionalism beyond knowledge of the professional codes and moral reasoning exists for the UK pharmacy undergraduate curriculum.

## 2. Aims

By considering healthcare professional education in the UK & pharmacy education in the USA, Canada, Australia & New Zealand:

- Compare models of education, assessment & quality assurance with those currently utilised for the education of pharmacy students in the UK
- Describe the integration of clinical placements into the different undergraduate curriculum and identify the costs and organisational issues
- Identify the quality assurance standards deemed 'appropriate' for pharmacy placements
- Identify the teaching, assessment methods used to assess competence and competency and the processes involved in their quality assurance
- Identify the methods of engendering professionalism utilised effectively within international schools of pharmacy

### **3. Method**

#### **3.1 Phase 1a - Literature review**

Education and healthcare literature was searched to identify evidence for:

- Integrating clinical placements into undergraduate education
- Integrating science and practice teaching
- Assessment and development of competence

The results of this are presented within the introduction.

#### **3.2 Phase 1b - Superficial description of models of education for UK healthcare professionals**

Web sites for all schools of medicine, dentistry and optometry in the UK were reviewed to identify:

- 1) The funding models
- 2) The level of integration of clinical placements and education
- 3) The point at which clinical skills are developed and assessed
- 4) How criterion referenced assessments are used in the allocation of degree classifications

A simple data collection form was sent to all schools of medicine, dentistry and optometry to obtain greater detail. Respondents were given the choice of providing a telephone number for us to arrange a discussion or completing the data collection form provided.

#### **3.3 Phase 2 - Detailed description of models of education using case studies**

One school from each of the following was identified and either visited or contacted for detailed information:

- UK School of Medicine
- UK School of Dentistry
- UK School of Optometry
  
- USA School of Pharmacy\*
- Canadian School of Pharmacy
- Australian School of Pharmacy
- New Zealand School of Pharmacy

\* Two schools each in different states were visited.

For each case study a data collection form was completed which was designed to identify details regarding:

- Clinical placements, preparation of students and accreditation of tutors
- Teaching methods used
- Methods for assessing competence
- Details of OSCE and Portfolio usage
- How professionalism was engendered and assessed within the curriculum

The notes taken from each visit were typed up and returned to the interviewees for correction/comment to ensure accuracy.

## **4. Results**

### **4.1 Phase 1b**

Information gathered indicates that schools of medicine and schools of dentistry follow one of two models.

- The first model is the front loaded approach. The early part of the course is mainly campus based with minimal vocational training.
- The second model is the integrated approach. Vocational training and academic study are integrated throughout the degree programme.

All schools of Optometry follow an integrated approach to training.

#### **4.1.1 Medicine**

##### **Funding Models**

The funding councils which support medical schools use two weightings; a 1.7 weighting is used for non-clinical periods of study and a weighting of 4 is used for clinical periods of study. The proportion of weighting for each degree course is negotiated independently by each university with HEFCE. In addition to the HEFCE funding, the NHS also provides funds to support the training of medicine students.

##### **Additional comments**

Short telephone interviews with staff in some schools provided information worthy of further comment.

- All degrees are classified as Pass/Fail or Distinction.
- It was felt by one medical school that the GMC are heavily pushing an integrated approach to medicine education. The same medical school did not use a portfolio of evidence at present, but are seriously considering doing so. They thought that this would make it easier to demonstrate how a particular student meets the competency framework from the GMC.
- Clinical skills labs were reported to be used by two medical schools to test student's competency in key areas before students deal with real patients.
- With all the schools where interviews took place, clinical & professional skills are assessed on a pass/fail basis. Any failed competencies must be repeated until a pass standard is reached.

**Table 4.1 Internet & telephone survey of UK Medical Schools**

<b>Model 1: Education then Training</b>	<b>OSCEs</b>	<b>Model 2: Education and Training Integrated</b>	<b>OSCEs</b>
Brighton & Sussex	Y1 onwards	University of Aberdeen	Y3 onwards
University of Edinburgh	Unknown	University of Birmingham	Unknown
Hull York Medical School	Y1 onwards	University of Bristol	Unknown
University of Leeds	Unknown	University of Cambridge	Unknown
University of London	Unknown	University of East Anglia	Y1 onwards
University of Nottingham	Unknown	King's College	Unknown
University of Oxford	Y3 onwards	Imperial College	Y3 onwards
Peninsula Medical School	Unknown	Keele University	Y1 onwards
University of Southampton	Y1 onwards	Leicester Warwick Medical Schools	Unknown
St George's	Y1 onwards	University of Liverpool	Unknown
University College London	Unknown	University of Manchester	Unknown
		University of Newcastle	Unknown
		Queen's University	Unknown
		University of Sheffield	Unknown

The model of education used by 3 medical schools was indiscernible.

**Table 4.2 Examples of models of education used in different UK Medical Schools**

<b>Medicine at Medical School 1 (Model 1)</b>		
	<b>Main venue</b>	<b>Placements</b>
Year 1	Campus	Some day visits and use of a clinical skills lab
Year 2	Campus	Some day visits and use of a clinical skills lab
Year 3	Hospital	4 X 8 week rotations
Year 4	Hospital	4 X 8 week rotations
Year 5	Hospital	2 X 16 week rotations

<b>Medicine at Medical School 2 (Model 2)</b>		
	<b>Main venue</b>	<b>Placements</b>
Year 1	Campus	Observation visits and use of a clinical skills lab
Year 2	Hospital	Short ward placements, GP shadowing and use of a clinical skills lab
Year 3	Hospital	Hospital placements across London
Year 4	Hospital	Hospital placements across London
Year 5	Hospital	Hospital placements across London

## 4.1.2 Dentistry

### Funding Models

HEFCE support dental schools using two weightings. A 1.7 weighting is used for non-clinical periods of study and a weighting of 4 is used for clinical periods of study.

A telephone interview with a course director at UK Dental Institute 1 indicated that each school bids for funding based on their own course structure. At UK Dental Institute 1 clinical and professional skills are very high profile and so they receive clinical funding for 4 out of 5 years and non-clinical funding for 1 year out of 5.

In addition to the HEFCE funding, the NHS also provides funds to support the training of dental students. This is currently 25k per student per year of training.

### Additional comments

Short telephone interviews with staff in some schools provided information worthy of further comment.

- Dentistry degrees are all classified Pass/Fail or Distinction
- The GDC competency framework has to be achieved before students can join the register. The GDC will send representatives to observe clinical skills being tested.
- The testing of clinical skills requires a lot of staff. Much of the NHS funding is used to provide supervisory staff for competency testing.
- One school felt that the GDC would like all schools to follow a portfolio approach to skills assessment. This would make it easier to justify that a particular student is competent to join the register.

**Table 4.3 Internet & telephone survey of UK Dental Schools**

<b>Model 1: Education then Training</b>	<b>OSCEs</b>	<b>Model 2: Education and Training Integrated</b>	<b>OSCEs</b>
Birmingham	Unknown	Glasgow Dental Hospital & School	Unknown
Bristol	Unknown	Cardiff Dental School	Y2 onwards
Dundee	Unknown	The Queen's University of Belfast	Unknown
Leeds	Unknown	GTK Dental Institute	Y2 onwards
Liverpool	Unknown		
Manchester	Unknown		
Newcastle	Unknown		
Sheffield	Y2 onwards		

**Table 4.4 Examples of models of education used in different UK Dental Schools**

Dentistry at Dental School 1 (model 1)		
	Main venue	Placements
Year 1	Campus	Some use of a Clinical skills lab
Year 2	Campus	Some patient contact (observation) and use of a clinical skills lab
Year 3	Hospital	Almost full time
Year 4	Hospital	Almost full time (including a 2 week general hospital visit)
Year 5	Hospital	Almost full time

Dentistry at Dental School 2 (model 2)		
	Main venue	Placements
Year 1	Campus	Observational work with patients
Year 2	Hospital	Start work with real patients
Year 3	Hospital	Almost full time (including community visits)
Year 4	Hospital	Almost full time (including a general hospital visit)
Year 5	Hospital	Almost full time

### 4.1.3 Optometry

#### Funding Models

HEFCE support optometry schools at a 1.7 weighting throughout the period of study.

A number of telephone interviews with schools of optometry indicated that a lack of funding at clinical weighting was a great difficulty.

In addition to the HEFCE funding, some schools of optometry generate small amounts of income from eyesight fees in their on-site clinic.

#### Additional comments

Short telephone interviews with staff in some schools provided information worthy of further comment.

- There was a strong feeling that following the competency framework issued by the GOC was good for the profession, but without proper funding it was very difficult to achieve.
- The GOC make visits to assess student competencies and also insist that 4 qualified staff sign off all competencies. This places a great burden on the staffing budget. In most cases, schools rely on local optometry staff to help with this assessment work, but of course, these additional staff need to be paid at professional rates.

**Table 4.5 Internet & telephone survey of UK Schools of Optometry**

<b>Model 2: Education &amp; Training Integrated</b>	<b>OSCEs</b>
Anglia Ruskin University	Y1 onwards
Dept of Vision Science, Aston	Y1 onwards
University of Bradford	Unknown
Cardiff University	Unknown
The City University (London)	Y1 onwards
Glasgow Caledonian University	Unknown
University of Manchester	Y1 onwards
University of Ulster	Y1 onwards

**Table 4.6 Examples of a model of education used in one School of Optometry**

Optometry at Optometry School 2 (model 2)		
	Main venue	Placements
Year 1	Campus/clinic	Access to eye clinic every day
Year 2	Campus/clinic	Access to eye clinic every day
Year 3	Campus/clinic	Access to eye clinic every day

## **4.2 Phase 2**

The schools visited in the UK were a:

- School of Medicine
- School of Optometry
- School of Dentistry

Pharmacy schools visited or interviewed internationally were labelled:

- Australia
- New Zealand
- USA 1
- USA 2
- Canada

The results are provided in the tables 4.7-4.11 and summarised in table 4.12.

**Table 4.7 Comparison of UK Dental & Optometry School Case Studies**

<b>Course in general</b>	<b>Dental Institute 1</b>	<b>Optometry Dept 1</b>
1) How are contact hours divided up across the years of the course?	Students follow the same year as staff. This is 6 weeks holiday plus bank holidays etc. The course is about 20% theory and about 80% practice (mainly in the institute with a few short community visits and one general hospital visit for one week.)	Students follow the same year as other students. The course is mainly in the department clinics with a few short community visits and one general hospital visit for one week.
2) How much time is spent on clinical skills in each year of the course?	Year one is about 80% academic work (including communication & professional skills) and about 20% in dental practice. Years two through to five are about 20% academic work and about 80% dental practice.	Year one is about 80% academic work (including communication & professional skills) and about 20% in practice. Years two and three are about 20% academic work and about 80% practice.
3) How much training do students receive before working with patients?	At the start of year one they have a communication skills and professional skills course. They then start to observe practice and towards the end of year one they start handling communication with patients. Hands on work with patient's starts in year two.	At the start of year one they have a communication skills and professional skills course. They then start to practice in the clinical skills lab and towards the end of year one they start handling communication with family and friends. Hands on work with patients starts in year two.
4) QA for placements? Tutor training etc.	There is a tutor handbook. Otherwise tutors work in the institute clinics under the supervision of permanent staff. Therefore QA is largely through direct observation.	Tutors work in the department clinics under the supervision of permanent staff. Therefore QA is largely through direct observation.
5) What teaching methods do you use?	A few lectures. Some PBL and IPL. Mainly, hands on in the clinical skills lab or a real clinic. The clinical skills lab is set up in such a way that each student can observe the same thing at the same time and the tutor can see what each student does on a monitor and can speak with each student individually via an intercom.	A lot of lectures in year one. Some PBL and some use of the clinical skills lab. Year 2 onwards is hands on in a real clinic. The clinical skills lab is set up in such a way that each student can carry out eye examinations whilst being observed by staff. 30 students and 4 staff.
<b>Assessment in general</b>	<b>Dental Institute 1</b>	<b>Optometry Dept 1</b>
1) Which types of assessment are used in the course?	There are a few general essays, but we are trying to change these to MCQs. The double marking requirements and possible complaints from 180 students across 5 years make MCQs the only way forward. Lots of OSCE type assessments.	Traditional exams and some lab work. Lots of observation assessments.
2) Which types of assessment are used when assessing competency?	OSCE type assessments. Slightly different because each student has their own surgery and the assessors move to these rather than the other way round.	Observation type assessments. Each student has their own surgery and the assessors move to these rather than the other way round.

**Table 4.7 Comparison of UK Dental & Optometry School Case Studies (cont'd)**

<b>Portfolios</b>	<b>Dental Institute 1</b>	<b>Optometry Dept 1</b>
1) Do you use portfolios for assessment?	Yes, the GDC require all students to provide evidence for all competencies. This is the easiest way to do this.	We tend to use a logbook rather than a portfolio. We also log competency attainment internally to help prevent cheating.
2) What do students put into a portfolio?	Anything that provides evidence of meeting a competency.	The logbook has descriptions of experiences. These are signed off by staff.
3) How often are students expected to update their portfolio?	It is suggested that portfolios are updated about every 4 weeks.	Every time they work in the clinic.
4) Is the portfolio graded or pass/fail?	Pass/fail only.	Pass/fail only.
5) Do you have a way of ensuring consistency between markers?	A tutor and two other staff observe all competencies. In the final year, a representative from the GDC will also observe competency marking.	A tutor and two other staff observe all competencies. In the final year, a representative from the GOC will also observe competency marking.
6) What happens if a student fails their portfolio?	This has never happened because all students must pass all competencies assessed in each year before moving onto the next year.	This has never happened. A student who fails to reach a competency can keep trying again.
<b>OSCEs</b>	<b>Dental Institute 1</b>	<b>Optometry Dept 1</b>
1) When do you use these?	We use our version of these from year one. Non-clinical work with patients in year one then clinical work with patients in years 2 through to 5.	We use our version of these from year one. Clinical work with friends/family in year one then clinical work with patients in years 2 and 3.
2) How many stations do you use?	We don't do things like that. Each student has his or her own surgery. We observe when a patient has a booked appointment.	Each student has his or her own surgery. We observe when a patient has a booked appointment.
3) How long is a student at each station?	From a few minutes to an hour or so, depending on the procedure.	Usually an hour or more. They are very thorough eye examinations.
4) How many stations use patients?	All 60 surgeries within one of our clinics will have real patients booked into it. Generally, each surgery will have several patients a day.	Our clinics will have real patients booked into them. Generally, each station will have several patients a day.
5) How many observers are at each station?	For clinics, there are 4 students to one member of staff. For work involving sedation there are 2 students to one member of staff.	Each competency has to be observed by three staff.
6) Do you assess the same thing at several stations?	The way we try to run things is that a particular clinic will concentrate on fillings for example in a certain number of weeks. The hope is that each of the 180 students will have been observed with more than one patient in that time.	For most basic eye examinations there is a set procedure to follow and so most stations will be doing the same thing.

**Table 4.7 Comparison of UK Dental & Optometry School Case Studies (cont'd)**

<b>OSCEs (cont'd)</b>	<b>Dental Institute 1</b>	<b>Optometry Dept 1</b>
7) Can students meet a competency by exhibiting it only once?	Yes, once they have evidence for their portfolio that is it.	Yes and no. The GOC expect all core competencies to be exhibited at the end of year 3 and during the course. In reality, a pressure of time means that most are met near the end of the course.
8) How many chances will a student get to meet a competency?	Within one year they can repeat as many times as possible. They cannot progress onto the next year if they fail anything. However, to actually fail, we would have to demonstrate to the academic board that they have been given lots of opportunity to pass. This can make the last week of the year very stressful!	As many times as possible. The limiting factor is the GOC visit in year 3. If a student fails to exhibit the core competencies at this point they will fail.

**Table 4.8 UK Medical School Case Study**

<b>Course in general</b>	<b>Medical School 1</b>
1) How are contact hours divided up across the years of the course?	Each year the students study for 30-36 weeks. Year 1            11 weeks placements Year 2            15 weeks placements Year 3            15 weeks placements Year 4            18 weeks placements Year 5            16 weeks placements
2) How much time is spent on clinical skills in each year of the course?	Clinical skills developed during placements. 4-5 days a year spent in the classroom developing consultation skills.  Time allocated each year to developing research skills.
3) How much training do students receive before working with patients?	Students undertake clinical tasks under direct supervision & observation, only after observing the clinical skill/task & practising it in a simulated/structure setting as appropriate.  Only when the students have been assessed as competent in a task (via OSCE – see later) will they be allowed to undertake the task without direct observation.  As students are in a clinical setting in week 1 of year 1 the emphasis of the preparation is on professionalism, which includes confidentiality, dress & behaviour.
4) QA for placements? Tutor training etc.	Training is provided for all tutors and is role specific – this may be ½ or 1 full day. For consultation skills training the tutors undertake exercises and peer group exercises where they feed back to each other. Tutors are peer reviewed in practice and students provide feedback on their tutors. Tutors are also given clear & detailed guidance as to the placement learning outcomes & how to achieve them.
5) What teaching methods do you use?	Problem Based Learning – drives the taught curriculum.  Lectures/seminars Patient workshops Self-directed learning Practical skills sessions
<b>Assessment in general</b>	<b>Medical School 1</b>
1) Which types of assessment are used in the course?	Written Assessments. Extended matching questions. Pseudo seen exams - scenarios provided in advance - students set questions on 3 of the scenarios - limited open book.  Portfolio reports. Students write a critical review of their personal and professional development yearly.  Oral presentations, Posters, OSCEs, Tutor reports & Research project.

**Table 4.8 UK Medical School Case Study (cont'd)**

<b>Assessment in general (cont'd)</b>	<b>Medical School 1</b>
2) Which types of assessment are used when assessing competency?	OSCEs for general competencies. Portfolio report for competence as critically reflective practitioners. The students do not collect evidence for inclusion in a portfolio.
<b>Portfolios</b>	<b>Medical School 1</b>
1) Do you use portfolios for assessment?	Only the portfolio report. Student portfolios are private.
2) What do students put into a portfolio?	It is entirely up to them. The School is introducing a 'log of procedural skills' which the students can complete as they demonstrate competence in them.
3) How often are students expected to update their portfolio?	No requirement.
4) Is the portfolio graded or pass/fail?	Report as with all other assessments is Pass/Fail/Distinction.
5) Do you have a way of ensuring consistency between markers?	N/A
6) What happens if a student fails their portfolio?	Write another portfolio report on a different theme.
<b>OSCEs</b>	<b>Medical School 1</b>
1) When do you use these?	17 OSCEs in total. At the end of each unit and at the end of the year.
2) How many stations do you use?	8 stations at the end of each unit. 20-26 stations at the end of each year. Actors and volunteers play patients in year 1. Real patients are introduced in latter years.
3) How long is a student at each station?	5-10 minutes.

**Table 4.8 UK Medical School Case Study (cont'd)**

<b>OSCEs (cont'd)</b>	<b>Medical School 1</b>
4) How many stations use patients?	<p>Approximately one quarter. Within a 26 station OSCE, 2 simulated patients, 2 volunteer patients, and 2 real patients.</p> <p>Students will also undertake clinical / procedural skill assessment on models, undertake results interpretation workstations and some, which include videos.</p>
5) How many observers are at each station?	Usually 1. For consultation skills assessment where content and style need to be assessed 2 observers are used.
6) Do you assess the same thing at several stations?	<p>No, each workstation covers a different competence. However, the unit and end of year will cover the same competencies, so students do have 2 attempts at demonstrating competence.</p> <p>The assessment is cumulative – using the 'Anghoff' method for producing a global rating and individual workstation rating.</p>
7) Can students meet a competency by exhibiting it only once?	Yes, but usually will be expected to attempt all twice (once at unit end and once at year end).
8) How many chances will a student get to meet a competency?	<p>Students may pass the year but not demonstrate a competency due to the development of a cumulative score over all workstations and the fact that the usual 'sudden death' approach after failing one workstation is not utilised.</p> <p>If the student fails the OSCE overall at the end of year they have one more attempt.</p> <p>In essence students get 3 attempts in total, one at the end of the unit, one at the end of the year and one retake.</p>

**Table 4.9 Comparison of New Zealand & Australia Pharmacy School Case Studies**

<b>Course in general</b>	<b>New Zealand*</b>	<b>Australia</b>
1) How are contact hours divided up across the years of the course?	<p>Year 1            Subject based curriculum   1 days placement</p> <p>Year 2            Subject based curriculum   2 days placement</p> <p>Year 3            Subject based curriculum   3 days placement</p> <p>Year 4            Subject based curriculum   5 days placement</p> <p>Graduation</p> <p>Pre-registration not integrated</p>	<p>Year 1            No placements</p> <p>Year 2            No placements</p> <p>Year 3            1 x 3 week placement space allocated</p> <p>Year 4            4 x 3 week placement spaces allocated</p> <p>Students undertake 4 x 3 week placements within the 5 spaces allocated:</p> <ul style="list-style-type: none"> <li>•            1 Community</li> <li>•            2 Hospital</li> <li>•            1 Rural – hospital or community</li> </ul> <p>These placements count towards the registration hours</p> <p>Placements cost 250,000 Australian dollars per year and are funded externally of the education system.</p>
2) How much time is spent on clinical skills in each year of the course?	<p>Approximately</p> <p>25-33% of year 1</p> <p>25-33% of year 2</p> <p>33% of year 3</p> <p>66% of year 4      1/3<sup>rd</sup> Pharmacotherapy, 1/3<sup>rd</sup> Pharmacy Practice &amp; 1/3<sup>rd</sup> Project</p>	<p>Approximately</p> <p>20-5% of year 1</p> <p>20-5% of year 2</p> <p>50% of year 3</p> <p>50% of year 4</p>
3) How much training do students receive before working with patients?	<p>1 lecture &amp; 1 workbook</p>	<p>Students receive a workbook to complete during their placements – which identifies goals.</p> <p>Students received debriefing sessions post placements.</p> <p>Students have received training in communication, human behaviour &amp; health psychology beforehand.</p>
4) QA for placements? Tutor training etc.	<p>1 x FTE staff co-ordinates placements</p> <p>Everyone in New Zealand knows everyone else and disreputable places avoided.</p> <p>Tutors get together after placements to discuss.</p> <p>The University also receives on feedback from students on placements?</p>	<p>A pharmacist is employed to visit placements to ensure suitability and address ongoing issues.</p> <p>Tutors receive a workbook prior to receiving students.</p> <p>An on-line training course is available and Monash pays for any tutors to undertake it, but it is not compulsory.</p> <p>The University obtains formal student feedback (as well as debriefing session) and will remove placements/tutors from their scheme if required.</p>

**Table 4.9 Comparison of New Zealand & Australia Pharmacy School Case Studies (cont'd)**

<b>Course in general (cont'd)</b>	<b>New Zealand*</b>	<b>Australia</b>
5) What teaching methods do you use?	Usual methods + case based learning	All usual teaching methods plus WEB CT, case based learning and moderator led discussion groups.
<b>Assessment in general</b>	<b>New Zealand</b>	<b>Australia</b>
1) Which types of assessment are used in the course?	Portfolio started in year 1 for 2005 OSCEs introduced into years 3 & 4 as 1 off stations  The dispensing exam is open book and a clinical viva is used	Usual range of assessments. Portfolio not currently being used, but to be introduced.
2) Which types of assessment are used when assessing competency?	Portfolio assesses professionalism  OSCE single stations in year 3 & 4	On-line calculations assessment. Produce 2 extemp products under assessment conditions. Dispensing and forensic exams are open book. 3 <sup>rd</sup> year oral exam. Case based written exams.
<b>Portfolios</b>	<b>New Zealand</b>	<b>Australia</b>
1) Do you use portfolios for assessment?	No not specifically.  During the year 4 placement a workbook is completed	Not currently.
<b>OSCEs</b>	<b>New Zealand</b>	<b>Australia</b>
1) When do you use these?	Years 3 & 4 in pharmacotherapy units, Dispensing units & OTC units	
2) How many stations do you use?	1 Only	
3) How long is a student at each station?	10-20 minutes  2 members of staff at the station  In the dispensary and OTC exams staff role-play patients	
4) How many stations use patients?	The dispensary and OTC exam workstations have mock patients	

**Table 4.9 Comparison of New Zealand & Australia Pharmacy School Case Studies (cont'd)**

<b>OSCEs (cont'd)</b>	<b>New Zealand</b>	<b>Australia</b>
5) How many observers are at each station?	2. Both independently assess and then agree the final mark	
6) Do you assess the same thing at several stations?	N/A	
7) Can students meet a competency by exhibiting it only once?	Evidence is collected throughout the year using the same marking schedule as formative learning	
8) How many chances will a student get to meet a competency?	3 attempts – Original, retake + one year later retake	
<b>Additional notes</b>		<p>All students are registered with the state board at the end of year 1 of their degree</p> <p>Every element of the course is linked to the indicative curriculum which is competency based. Within this there is a section on Professionalism (appendix E).</p>

**Table 4.10 Comparison of USA Pharmacy School Case Studies**

Course in general	USA 1	USA 2
<p>1) How are contact hours divided up across the years of the course?</p>	<p>2 years pre-university, post 18 education, to prepare for 4 year degree</p> <p>Years 1 -3 Early Experiential Pharmacy Experiences. Eg. Interacting with patients, and asking the patient what they like/dislike about their care, the health system etc Just to begin to get a feel for patients. These experiences are usually a single afternoon or day vs a clinical assignment.</p> <p>Year 4 Clinical placements (Advanced Practice Experiences)</p> <p style="padding-left: 40px;">Acute care 2 x 6 weeks (40hrs per week)            Ambulatory care 2 x 6 weeks ( “ “ )            Elective clerkship 2 x 6 weeks ( “ “ )</p> <p>1 year block, students find own housing, university paid faculty at each placement site, however there are in addition 500 + unpaid faculty to support training. The paid faculty facilitate the placements at each site rather than try to provide them all.</p>	<p>2 years pre-university, post 18 education, to prepare for 4 year degree</p> <p>Placements / Clerkships for each year</p> <p>Year 1 Service placement – a minimum of 40 hours – usually non-pharmacy related – to develop communication skills, understanding of different cultures &amp; more general health-related issues</p> <p>Year 2 2 x 12 hour experiences – shadowing + 4 x 1 hour discussions – focus is on public health</p> <p>Year 3 3 x 4 hour experiences in 2 different settings – active participation – focus is on patient interviews, consultations &amp; evidence based medicine (students learn to evaluate a complex case and answer a clinical question using evidence-based principle in each setting)</p> <p>Year 4 1 year of Clinical rotations</p> <p>University has 800 clinical instructors – but similar to USA 1 has hubs where paid faculty facilitate clinical placements. The Alumni system is important in developing these placements and recruiting instructors.</p> <p>NB: there is drive by the American College for Pharmacy Education (ACPE) for more clerkships to be included earlier on in the course</p>
<p>2) How much time is spent on clinical skills in each year of the course?</p>	<p>20% of 1<sup>st</sup> two years            50% of 3<sup>rd</sup> year            100% of 4<sup>th</sup> year</p>	<p>Approximate from course documents – time spent on clinical and professional aspects:</p> <p>20% year 1            25% year 2            75% year 3            100% year 4</p>

**Table 4.10 Comparison of USA Pharmacy School Case Studies (cont'd)**

Course in general (cont'd)	USA 1	USA 2
3) How much training do students receive before working with patients?	<p>Students have to complete 100 MCQ clinical questions – qualifying exam for final year. Also required to have a passing grade point and completed all of their required courses.</p> <p>Placement faculty are aware when students are undertaking their first placement.</p>	<p>Patient skills are slowly developed throughout the course</p> <p>However specific unit PHM 652 Pharmacist communication in Spring Semester of third year.</p>
4) QA for placements? Tutor training etc.	<p>All tutors are licensed and accredited by the professional association.</p> <p>To become appointed faculty tutors need to demonstrate experience in or promise for quality teaching.</p> <p>All receive an 'effective clinical preceptor' pack.</p> <p>Also rely on student feedback on each placement. If student feedback on a preceptor/tutor is consistently poor then the university may decide to stop using the placement.</p> <p>Criteria below for initial appointment at the Assistant Clinical Professor level</p> <ul style="list-style-type: none"> <li>• Licensed and in good standing</li> <li>• A competent practitioner and good role model for students</li> <li>• Supports and promotes the academic mission of the School of Pharmacy</li> <li>• Commits to excellence in teaching</li> <li>• Devotes a minimum of 50 hours per year to the USA 1 teaching program</li> <li>• Excellent interpersonal and communication skills</li> <li>• Completion of a post-graduate residency, fellowship, advanced degree, or equivalent practice experience</li> <li>• Engages in continuous professional development</li> <li>• Contributes to advancement of the profession through scholarly work or professional involvement</li> <li>• Complies with all applicable university personnel policies and procedures</li> </ul>	<p>All tutors must meet minimum requirements of:</p> <ul style="list-style-type: none"> <li>• 32 hours practice per week</li> <li>• Been at the site for at least 6 months</li> <li>• Held a practice license for at least 12 months</li> <li>• Enthusiastic to take students</li> </ul> <p>All tutors/preceptors undertake web-based training packs:</p> <ul style="list-style-type: none"> <li>• Specific to their course x 2 hour 1</li> <li>• Preparing for clerkship &amp; setting up a syllabus x 1 hour 1</li> <li>• Team teaching x 1 hour 1</li> <li>• Motivating the student x 1 hour 1</li> <li>• Providing effective feedback x 2 hour 1</li> <li>• Rater training x 1 hour 1</li> <li>• Culture &amp; diversity x 1 hour 1</li> </ul> <p>All sites are paid \$400 per rotation, which lasts for 7-8 weeks. Students undertake 38 - 46 weeks of rotation in their final year = 1520-1840 hours.</p> <p>Also rely on student feedback on each placement. If student feedback on a preceptor/tutor is consistently poor then the university may decide to stop using the placement.</p> <p>The 2<sup>nd</sup> year reflective piece on their clerkship is useful for monitoring placements.</p> <p>There are professional meetings organised for 2<sup>nd</sup> and 3<sup>rd</sup> and 4<sup>th</sup> year preceptors to attend.</p>

**Table 4.10 Comparison of USA Pharmacy School Case Studies (cont'd)**

<b>Course in general (cont'd)</b>	<b>USA 1 *</b>	<b>USA 2</b>
5) What teaching methods do you use?	<p>Case based learning, in addition to all of the more traditional methods.</p> <p>Estimated.                      1<sup>st</sup> year 85% Lectures      15% interactive workshops                      3<sup>rd</sup> year 75% lectures      25% interactive workshops</p>	<p>Case based learning, in addition to all of the more traditional methods</p> <p>Within the Pharmacotherapy units students develop clinical skills in a controlled environment – this may include small group work and case studies</p> <p>Estimated                      1<sup>st</sup> -3<sup>rd</sup> year      85% Lectures      15% labs/workshops</p>
<b>Assessment in general</b>	<b>USA 1 *</b>	<b>USA 2</b>
1) Which types of assessment are used in the course?	<p>For the clinical side of the course – Short answer questions, MCQs &amp; case based questions.</p> <p>Students receive six oral exams in 3<sup>rd</sup> year.</p> <p>Receive patient case before hand and SOAP it for 30 minutes as a closed book exam.</p> <p>Present patient and patient counselling required. Expected to discuss 2 out of the 3 drug induced problems identified &amp; get 5 minutes feedback from the assessors at the end.</p>	<p>For the clinical side of the course – All MCQs in examinations. Coursework consists of SOAPs.</p>
2) Which types of assessment are used when assessing competency?	<p>The 3<sup>rd</sup> year oral exam assesses whether pharmaceutical problems can be identified, student organisational, communication, problem solving and priority setting skills.</p> <p>Students are required to demonstrate competency in each 6-week rotation. By week 3 they are expected to be able to demonstrate competence in the placement related competencies and for the remaining 3 weeks are expected to repeat each competence on numerous occasions.</p> <p>At three week a mid-term evaluation takes place and pre-ceptor (tutor) discussed development.</p>	<p>OSCEs &amp; Portfolios.</p>

**Table 4.10 Comparison of USA Pharmacy School Case Studies (cont'd)**

Portfolios	USA 1 *	USA 2
1) Do you use portfolios for assessment?	<p>No. The school is considering monitoring development of the students over the final year, as the Head of School has identified a need for this – this may need to be via portfolio.</p> <p>Currently students have to undertake a set of variety of placements and therefore all competencies are achieved by ensuring all relevant experiences are provided.</p>	<p>Yes during the clerkships/rotations.</p> <p>Considering introducing this type of assessment in the pharmacotherapy classes – students currently complete a laboratory folder and this may be convertible.</p> <p>Similarly in year 2 students are expected to write a reflective piece on their clerkship experiences.</p>
2) What do students put into a portfolio?	N/A	<p>Any case studies or drug information queries into their portfolio.</p> <p>Evidence of completing set tasks for the university.</p> <p>Each rotation has a 9-point framework and student development wrt this framework is assessed by their tutor (as well as self-assessment) at 4 weeks and then at the end. The portfolio is used to inform these assessment points.</p>
3) How often are students expected to update their portfolio?	Student rotations are for 6 weeks.	Student rotations are for 7/8 weeks and the portfolio is assessed at week 4 & week 7/8.
4) Is the portfolio graded or pass/fail?	Placements/rotations are graded pass/fail.	The 9-point tool contributes to 50% of the grade for the unit. Students are assessed by their tutor on all 9 points – mainly by direct observation and portfolio evidence and graded from 1-5. All points must be passed at 3 or more.
5) Do you have a way of ensuring consistency between markers?	Marks provided by pre-ceptors / tutors are consistently monitored. If marks are either consistently lower or higher than would be expected a discussion between the university and preceptor/tutor will take place.	<p>The scores are reviewed on computer – for which 7 years information is held.</p> <p>Frequently variation is due to the uniqueness of the placement. Evidence on each pharmacy placement and pharmacist/tutor is held, which enables comparisons to be made.</p> <p>Univ has a grievance policy if students are unhappy with their experience.</p> <p>Town Hall Meetings are held each year in 6 different regions to enable tutors to give feedback on the clerkships.</p>
6) What happens if a student fails their portfolio?	If a student fails a placement there is space provided in the organisation for an additional placement. but it does mean that the student will graduate late.	<p>This is a rare occurrence due to the students being very closely supervised and remediation put in place if need be.</p> <p>If a student fails a clerkship there is space provided in the organisation of the 4<sup>th</sup> year for an additional clerkship.</p>

**Table 4.10 Comparison of USA Pharmacy School Case Studies (cont'd)**

OSCEs	USA 1 *	USA 2
1) When do you use these?	No OSCEs.	<p>Formative.</p> <p>2<sup>nd</sup> 1<sup>st</sup> semester 2 stations – New Px requires counselling &amp; refill Px need to check with patient how it is working</p> <p>2<sup>nd</sup> 2<sup>nd</sup> semester 2 stations – New Px requires counselling &amp; refill Px need to check with patient how it is working</p> <p>2<sup>nd</sup> year separate physical assessment of BP, Cardiac Risk Assessment, Smoking cessation counselling &amp; SOAP note</p> <p>80% of assessment based on content, 20% on communication</p> <p>3<sup>rd</sup> 1<sup>st</sup> semester 3 stations – Responding to symptoms, Patient profile + physician recommendation, SOAP note</p> <p>Summative OSCE in</p> <p>3<sup>rd</sup> 2<sup>nd</sup> semester 4 stations – Interviewing a patient to identify needs, Physician interaction, patient counselling + SOAP note.</p> <p>There is an OSCE in the fourth year of the program in the fall semester. It has 5 stations – profile review, patient interview, interacting with health provider, counselling patient, and SOAP note. This is a pass-fail and if a student fails, they will complete a remediation project.</p> <p>If students fail OSCE they receive remediation from the lab co-ordinator e.g. essays + reflection.</p>
2) How many stations do you use?		<p>Typically for the formative OSCEs 2-3 stations each for 5-10 minutes.</p> <p>Observer is scoring based on evaluation criteria.</p> <p>Actors or senior students used to role-play and sessions videotaped.</p> <p>Stations can consist of:</p> <ul style="list-style-type: none"> <li>• Counselling</li> <li>• Drug therapy problem and need to speak to a physician</li> <li>• Blood pressure monitoring</li> <li>• Spirometry measurements</li> </ul> <p>Grade doesn't count towards final score.</p> <p>Summative is Pass / Fail.</p>

**Table 4.10 Comparison of USA Pharmacy School Case Studies (cont'd)**

OSCEs (cont'd)	USA 1 *	USA 2
3) How long is a student at each station?		5-10 minutes.
4) How many stations use patients?		See above.
5) How many observers are at each station?		One + video.
6) Do you assess the same thing at several stations?		No, but repeat each competency twice a year – see above.
7) Can students meet a competency by exhibiting it only once?		Yes.
8) How many chances will a student get to meet a competency?		Two.
<p><b>Additional notes</b></p>	<p>Professionalism is identified at the point of recruitment. The school has 1200 applicants for 120 places. The students are asked to provide a written statement about themselves as part of their application. 900 applications are disregarded due to poor grades and/or poor written communication, lack of outside activities or simply not measuring up as well to the 350 or so that are invited to interview for the 120 seats in the entering class.</p> <p>Each of the 300 successful students are then interviewed, during which they are asked to produce another written statement without prep. Attitude and professionalism is assessed during the interview.</p> <p>Preceptors/tutors assess professionalism during the rotations.</p> <p>The school has a Student Judicial Council (3 students + 2 faculty) who deal with ethical problems but only if identified and brought to the attention of the Dean.</p>	<p>School of Pharmacy has a top 200 drugs which the students have to learn during their degree program</p> <p>Professionalism is engendered through:</p> <ul style="list-style-type: none"> <li>• White coat ceremony</li> <li>• Faculty meetings to discuss professional behaviour of students</li> <li>• Clerkship &amp; OSCEs</li> <li>• Clearly defined expectations of staff</li> <li>• Student Handbook Policy</li> </ul>

**Table 4.11 Canadian School of Pharmacy Case Study**

Course in general	Canada
1) How are contact hours divided up across the years of the course?	<p>2 years pre-university, post 18 education, to prepare for 4 year degree</p> <p>Placements / Clerkships for each year</p> <p>Year 1            4 x ½ day community pharmacy experiences – Observational</p> <p>Year 2            4 x ½ day hospital pharmacy experiences – Observational</p> <p>Year 3            No clinical or practical placements</p> <p>Year 4            2 x 8 week (35 hour per week) clinical rotations</p>
2) How much time is spent on clinical skills in each year of the course?	<p>Approximate from course documents – time spent on clinical and professional aspects:</p> <p>25% year 1</p> <p>20% year 2</p> <p>50 % year 3</p> <p>87.5 % year 4</p>
3) How much training do students receive before working with patients?	<p>Patient skills are developed in year 3 &amp; 4 clinical skills labs (PHM 329 &amp; PHM 429) where students practice patient role plays</p> <p>Students are assessed via direct observation in each lab and must pass 8 out of 10 labs</p> <p>The students are also introduced to 'communication skills' before their first clinical placement in the final year</p>
4) QA for placements? Tutor training etc.	<p>All tutors must:</p> <ul style="list-style-type: none"> <li>• Be licensed pharmacists with a commitment to pharmaceutical care</li> <li>• Complete an application form which identifies the tutor's philosophy of practice, demonstrates that the working environment is appropriate and that the tutor's manager is fully supportive of the application.</li> <li>• Undertake the school's tutor training course</li> </ul> <p>The weekend tutor training course covers:</p> <ul style="list-style-type: none"> <li>• Undergraduate course</li> <li>• Assessment &amp; feedback</li> </ul> <p>Tutors also have to attend update sessions which are provided every 2 years</p> <p>The coursework submitted from students with new tutors is reviewed to ensure that it is up to expected standards</p> <p>Also rely on student feedback on each placement. If student feedback on a preceptor/tutor is consistently poor then the university may decide to stop using the placement</p> <p>Each placement is paid \$1200 (£600) for each 8 week rotation</p>

**Table 4.11 Canadian School of Pharmacy Case Study (cont'd)**

<b>Course in general</b>	<b>Canada</b>
5) What teaching methods do you use?	Case based learning, in addition to all of the more traditional methods  1 <sup>st</sup> -3 <sup>rd</sup> year      80% Lectures      20% tutorial / practicals 4 <sup>th</sup> year            18% lectures      2% tutorial / practicals      80% clinical placements
<b>Assessment in general</b>	<b>Canada</b>
1) Which types of assessment are used in the course?	Oral examinations for Pharmaceutical care units  OSCEs  Majority of clinical/practice papers are Multiple Choice Exams and Short Answer questions  Case study seminars in groups of 8
2) Which types of assessment are used when assessing competency?	Learning portfolio during clinical placements – this is not submitted back to the school, but checked off by the placement tutor/preceptor to determine how the student is progressing.
<b>Portfolios</b>	<b>Canada</b>
1) Do you use portfolios for assessment?	Not for formal university assessment.  Used by preceptors to assess performance
2) What do students put into a portfolio?	What is necessary to demonstrate that they have met the site specific learning objectives  Other activities and forms are used to demonstrate that students meet all criteria for their clinical experiences  Students are expected to complete an observation record every couple of days and this forms part of their evidence
3) How often are students expected to update their portfolio?	At each new placement

**Table 4.11 Canadian School of Pharmacy Case Study (cont'd)**

<b>Portfolios (cont'd)</b>	<b>Canada</b>
4) Is the portfolio graded or pass/fail?	Yes, by the preceptor  Aim is to prepare them for practice
5) Do you have a way of ensuring consistency between markers?	The tutor training weekend and updates are designed to address this  The school relies on practitioners to be able to make judgements  Students are rated on a 5 point scale from poor to excellent  Their placement score does not affect their overall degree score, however they must achieve at least 60% overall for the placement to count
6) What happens if a student fails their portfolio?	If a student fails a placement they have to repeat it
<b>OSCEs</b>	<b>Canada</b>
1) When do you use these?	No information obtained
2) How many stations do you use?	
3) How long is a student at each station?	
4) How many stations use patients?	
5) How many observers are at each station?	
6) Do you assess the same thing at several stations?	

**Table 4.11 Canadian School of Pharmacy Case Study (cont'd)**

<b>OSCEs (cont'd)</b>	<b>Canada</b>
7) Can students meet a competency by exhibiting it only once?	
8) How many chances will a student get to meet a competency?	
<b>Additional notes</b>	Professionalism is engendered through: <ul style="list-style-type: none"> <li>• Admitting students with appropriate attributes/attitudes</li> <li>• White coat ceremony in the first year</li> <li>• Clearly defined Standards of Professional Practice Behaviour</li> <li>• Placement tutors/preceptors completing an 'Evaluation of Student's Professional Behaviour' as part of the placement assessment (Appendix D)</li> </ul>

**Table 4.12 Summary of competency training and assessment**

Subject area	Pharmacy						Medicine	Dentistry	Optometry
	Country	UK	USA 1	USA 2	Canada	Australia	New Zealand	UK	UK
<b>Undergraduate degree program</b>									
Length of degree program	4 years	2+4 years	2+4 years	2+4 years	4 years	4 years	5 years	5 years	3 years
Total time spent in active placements	Varies	1440+ hours	1500+ hours	16 weeks	480 hours	88 hours	77 weeks	Varies	Varies
Competency led undergraduate curriculum	x	✓	✓	✓	?	?	✓	✓	✓
Case based learning	✓	✓	✓	✓	✓	✓	x	✓	✓
Problem based learning	Rare	x	x	x	x	x	✓	✓	✓
OSCEs used for assessment	Varies	x	✓	✓	x	✓	✓	✓	✓
No. workstations	Varies	N/A	2-5	TBC	N/A	1	8-16	Varies	Varies
<b>Preregistration Training Requirements</b>									
Total time in practice required	1 year (Approx 1700 hrs)	1500 hours (40 weeks)	1500 hours (40 weeks)	32 weeks (Approx 1280 hours)	2280 hours	40 weeks (approx 1400 hrs)		Unknown	Unknown
Total time spent in practice prior to graduation contributing to registration requirements	0	1000 hours	1500 hours	16 weeks	456 hours	0	All	Unknown	Unknown
<b>National registration assessment(s)</b>									
• MCQs	✓	✓	✓	✓	x	x		x	x
• OSCEs	x	x	✓	✓	x	x		✓	✓
No. workstations	N/A	N/A	2	16	N/A	N/A		N/A	N/A
Independently (of university) Administered Law Exam	x	✓	✓	✓	✓	x		Unknown	Unknown
<b>Quality Assurance of University Training Placements which contribute to registration</b>									
Training environment assessed for appropriateness	✓	✓	✓	✓	✓	✓	✓	✓	✓
Minimum licence holding status of tutor	3 years	Unknown	12 months	Unknown	12 months	3 years		Unknown	Unknown
Tutor training compulsory	N/A	Optional	✓	✓	Optional	✓	✓	Unknown	Unknown
Tutor removed or placement discontinued if unsatisfactory	N/A	✓	✓	✓	✓	✓	✓	✓	✓
Students complete workbooks or portfolios	N/A	✓	✓	✓	✓	✓	✓	✓	✓
Students produce coursework which is independently assessed during practice placements	N/A	✓	✓	✓	✓	✓	✓	✓	✓

## 5. Discussion

The curricula for dentists, doctors and optometrists in the UK are competency driven, thus criterion referenced assessments are utilised. Medicine and Dentistry overcome the difficulty created by using this form of assessment via awarding pass / fail / distinction degrees as opposed to degree classifications which are based on the traditional norm referenced assessments found within universities. If pharmacy is to move towards a competency based curriculum, then UK Schools of Pharmacy may be required to adopt a similar approach.

When considering the theory and preparation for professional role debate, it is apparent that doctors, dentists and opticians are prepared for professional registration under the auspices of the universities with an increasing trend towards earlier exposure of students to clinical practice and patients. Even in the Universities which tend to separate theory from role preparation, a number of clinical placements outside of the university are provided within the first few years of the degree. Within optometry, all schools expose students regularly to real patients from year 1 and this is facilitated by the provision of a clinic on-site where external patients book appointments. Dental schools tend to provide the majority of their early patient exposure via on-site clinical skills labs and then rely on hospitals for the latter practical training. From the two dentistry schools considered in depth, the clinical skills labs held within the university are run in a similar fashion to that of optometry with patients booking appointments and attending for treatment by students, under the supervision of academic practitioners.

Traditionally, medical schools are associated with a local teaching hospital and the majority of patient exposure would be obtained via this route. Increasingly however, medical schools such as the visited UK medical school are providing a significant number of placements within the local general practitioner training practices. With the current movement of NHS resources from secondary to primary care this trend may increase. It could also be argued that as the majority of illness is found in primary care this is a more suitable location for clinical training.

Due to the nature of healthcare provided by pharmacists the inclusion of on-site pharmacies within the campus of the schools themselves may not be appropriate as the health needs of patients located on or around a campus will be very specific and thereby limit the breadth of the experience. It also may be unacceptable for non-professionally registered undergraduate pharmacy students to have access to their university colleagues' pharmaceutical records. Particularly when considering the main uses of university pharmacies.

With pharmacists undertaking more clinical roles, a university based clinical skills lab which offers free pharmaceutical care appointments to primary care patients based outside of the university may provide appropriate clinical skills training opportunities. Such a model requires evaluation as nothing of this nature was found to exist in any of the schools of pharmacy visited.

Pharmacy schools adopting a more integrated approach to education and training, similar to that seen in Medicine, would need significant additional funding to facilitate appropriately quality assured placement training within their local hospitals, primary care trusts & community pharmacies. Additional staff would be required in all sectors where training requirements were significantly increased from present levels and this could not be expected to be altruistically met by NHS or private employers.

The funding of medical and dental education by HEFCE was negotiated independently by each school however there seemed to be a national agreement that a proportion of medical and dental degrees would receive funding at a clinical level. This significant increase in funding from approximately 8K per student per year to 20K is required to pay for the clinical support provided during the placements (in addition to extra staffing requirements, the salaries of clinicians being greater than those of academics), the extensive assessment costs

associated with providing reliable and valid assessment of competency and to fund the clinical skills laboratories.

Conversely, it would seem that Optometry has not managed to negotiate a national agreement with HEFCE. This seems to have created significant difficulties for the schools that are reportedly using their research income to fund the education process. This difficulty apparently arose from the professional body implementing a competency based curriculum before negotiating funding at a national level to support the move.

It may be argued that the majority of ophthalmic work is performed privately i.e., outside of the NHS and therefore the major companies interested in optometry should assume some responsibility for training and education costs. This argument does not hold when considering dentistry. The majority of dental work is now performed outside of the NHS with the government seemingly content to continue to fund the extensive associated training costs.

With a significant proportion of pharmacists employed within hospitals and primary care trusts and community pharmacists assuming more clinical roles (with approximately 90% of their income from the NHS contract, which is not too dissimilar to that of general practitioners) it could be argued that pharmacy has a greater right to receive clinical training funding than either optometry or dentistry.

## **5.1 Assessment of competence**

Objective structured clinical examinations (OSCEs) seem to be utilised in all of the schools of medicine that were contacted or provided information. Even in those Universities which did not provide significant placements in the first two years of the degree, OSCEs were used for assessment in year one. The UK medical school which was visited used OSCEs at the end of each semester not only for progression purposes but to identify whether students would be safe to practice tasks with a lesser level of supervision during their placements.

The schools of dentistry and optometry relied on observation of practice within their clinical skills laboratories rather than traditional OSCEs for their assessment of competence. The difference between these two approaches is that 'the assessors move to the students and their patients' rather than the 'students moving to the assessors and patients'. The use of clinical skills laboratories with patients requiring real care should provide a much better assessment of the student in practice than traditional OSCEs.

## **5.2 Course design**

Considering the schools of medicine, dentistry & optometry visited, it would seem that the practice elements of the degree predominate generally from year 2 onwards, with only year 1 providing a significant element of underpinning theory. This is in contrast to all pharmacy degree programmes considered, where the practice element does not tend to predominate until years three and four of the degree programme, with more than two years of significant theory before extensive clinical training and education takes place.

A significant culture change would be required for pharmacy degree programmes in the UK to move to the models seen for the education of other UK healthcare professionals, although, in many cases pharmacy models of education in the UK mirror those seen internationally. Furthermore, it could be argued that the extensive science based education is required for the schools of pharmacy to enable their scientific research output and prepare students for both roles as pharmaceutical scientists and practitioners.

In the North American and Canadian schools of pharmacy, the final years of their degree programmes are used solely for clinical placements. The amount of university placement time that contributed to the students' registration requirements differed depending on whether the

registering body believed this training was sufficient to prepare the students to undertake the competence based registration examination. Conversely, in Australia and New Zealand, although some clinical training placements are provided within the degree program, all of the time spent which contributes to registration requirements is post graduation.

Whichever model is used to ensure that students receive significant clinical placement training time, quality assurance of the placements and tutors is required. In places such as USA 1 and Canada, where training time which contributes to registration requirements is provided both within and outside of the university's auspices this results in two distinct placement programs in the same locality. The quality assurance costs are doubled and no doubt problems arise with clashes in two different clinical training timetables. The completely integrated programs seen in USA 2 or the separate programs seen in Australia or New Zealand would seem to be more cost-efficient approaches. Interestingly, the USA 2 approach mirrors that of Dentistry & Medicine in the UK and Australia and New Zealand mirroring Optometry in the UK.

The Australian model for providing 15 weeks of placements within the degree program is not funded by the normal educational funding streams and has required significant entrepreneurialism to identify a suitable benefactor. This amount of placement time is impressive in a pharmacy education programme similar to that of the UK. As a comparator however, the medical students at the School of Medicine visited have undertaken 15 weeks of placement training by the first semester of the second year of their five year programme.

### **5.3 Preparation of students for clinical placements**

The preparation of all healthcare students for meeting their first patients ranged from extensive communication and professional skills training and assessment, to a single session on professionalism. The difference in approach would seem to be due to differences in the perception of the role of the clinical placement within the training program i.e., to either build on what had been taught before or to provide the main teaching method for the competences being developed. The importance of the professionalism of the students during the placement was highlighted in all visits and demonstrated by its inclusion within the assessment of student performance.

In all cases, students were reported to have been provided with clear learning outcomes for their placements and workbooks to complete during their learning experience. Furthermore, tasks were generally set by the Universities, which were assessed in the workplace, but copies were kept by the Universities for moderation of borderline cases.

### **5.4 Preparation of clinical placement tutors (preceptors)**

The use of placements within dentistry and optometry was limited as the majority of training was undertaken within their clinical skills laboratories. Although they were reliant on the support of non-university based practitioners to run these laboratories, quality assurance of the process was maintained by close supervision by academic staff. Similarly, peer review of placement tutors by academic staff was reported by the visited medical school.

The accreditation criteria for placement tutors described by USA 1, USA 2 and Canada are very similar and provide useful models, considering both tutor competence to practice and the tutor's attitude to training. Interestingly, little emphasis was placed on the length of practice experience that placement tutors had other than them being required to be licensed to practice. This is in contrast to current UK requirements for pre-registration tutors to have at least 3 years experience. Although this 3 year requirement can be circumvented with special circumstances it is the normal expectation. It could be argued that the best people to train undergraduate students are those who have most recently been through the experience and therefore can better relate to their less experienced colleagues. All of the tutor requirements outlined by the international schools of pharmacy would however be difficult to implement

without the reasonable remuneration that was found to be paid to all placements for receiving university students.

In all cases of significant external placement time, placement tutor competence was developed by the provision of training material, either face to face, on-line or via distance learning. Training materials consisted of both guidance on the placement learning outcomes and the skills required to be an effective tutor e.g. rating students, providing feedback, team teaching, motivating the student and culture and diversity. The assessment of competence of placement tutors prior to receiving students was not reported as being undertaken by any of the schools considered. The approach taken by the visited UK medical school in the use of independent assessor is probably a more acceptable method of ensuring placement tutor competence.

Student feedback was reported by all schools as a mechanism for monitoring placements and in all cases schools stated that placements would be removed if the training was felt to be inadequate.

### **5.5 Quality assurance of placements**

All schools visited or considered had similar processes in place to those outlined by Baker *et al.* [32] for ensuring reliability of placement tutors. Similarly, all UK healthcare schools visited and International pharmacy schools considered would more than meet the current UK QAA set criteria.

The QA processes in place within schools of pharmacy within the UK were not considered in this report, however it should be noted that practice placements are covered by the UK Quality Assurance Agency code of practice. UK pre-registration pharmacy students are assessed by their placement tutor in the workplace and via MCQ examinations. The former process would only meet the first Baker criterion [32] (specification of criteria) and would not meet current QAA standards due to lack of feedback processes from students and relative inability to identify and remove unsuitable placements.

### **5.6 Teaching methods employed**

Problem based learning (PBL) was being used within the dental, optometry & medical schools visited to lesser or greater extents, but was not seen in any of the international schools of pharmacy visited or considered. The dental and optometry schools reported using PBL as one method of teaching, which is in contrast to the visited UK medical school, which has based its entire curriculum on this teaching method.

Case based learning was described in all schools of pharmacy however, this is taught with a workshop format, does not usually conform to the loose definitions of PBL [46] and therefore is not primarily designed to develop the same skills and attitudes.

Schools of pharmacy in the UK are starting to report the use of PBL as a teaching method [47], however this is at the initiative of educationalists within the schools rather than as a registration authority directive. If pharmacy education in the UK is to become competency led and therefore more skills focused, the reliance on traditional teaching methods such as lectures and workshops will need to be considered.

### **5.7 Assessment**

Schools of medicine, dentistry & optometry are moving towards a greater reliance on assessment via multiple choice questions (MCQs) and short answer questions rather than essays. The rationale provided by the UK dental school for 100% assessment via MCQ was their objectivity and that this would ensure that student appeals against failure could not be

lost. The use of extended matching questions was described by the visited UK medical school as their preferred method.

MCQs were used by all International schools of pharmacy; however, these were as a part of the wide digest of different assessment methods. Interestingly, all identified pharmacy registration assessments consisted of mainly MCQs. The format of MCQs used in the countries considered was not identified. Within the UK pharmacy registration examination, students are given only five answers to choose from, no negative marking is applied and a pass mark of 70% is required. This means that students may well be achieving the pass mark when in reality they know much less than this mark is intended to indicate. The use of extended matching questions is one approach to minimising the effect of guessing.

MCQs are removed from the RPSGB Registration Examination if they are found to be inappropriate, for example, if a large number of candidates have obviously misunderstood the scenario. The USA & Canadian approach is to include pre-test questions within their registration MCQ assessments which do not count towards the marking. This avoids the problem caused by post assessment removal. Whichever approach is taken, students would still be exposed to erroneous questions and using the USA & Canadian models, it would mean that all included questions had been seen by some students before their first 'official' appearance.

The use of OSCEs reported by visited UK Schools of medicine and all international schools of pharmacy was extremely varied with few meeting the standards for reliability outlined within the literature. Although data on the structure of OSCEs within Canadian schools of pharmacy was not collected, the use of OSCEs in Canada for entry-to-practice assessment is well described in the literature [48]. This was the only method identified as being used by the pharmacy profession which uses a large number of similar OSCE workstations, identifying that 15 were required for consistent and dependable results.

Frequently, students within the schools within which data could be collected could be described as competent by demonstrating a competence just once and equally described as incompetent by failing to demonstrate a competence at their first attempt. At the visited UK School of medicine, students who failed at their first and only attempt at a workstation were given one further attempt at the end of the year. A similar process was described at USA 2 school of pharmacy. The literature seems to suggest that assessment reliability can only be assumed with a number of attempts at the same type of workstation [19]. Although workplace assessment by an observer should in theory consist of multiple observations frequently this is not the case and judgements may be based on one observation only. Consequently the same problems seen with one station one skill/task OSCEs can be found with workplace assessment.

Portfolios were being used within the schools of optometry and dentistry visited to record student competency development and this in both instances was at the request of the registering authorities. The use of reflective statements and personal development planning within the dental and optometry schools was not identified nor described during the interviews. Within the visited UK School of medicine, a portfolio was kept by the undergraduate students, with only their reflective essay at the end of the year assessed formally. The school is however considering incorporating a clinical skills list similar to that seen in dentistry and optometry to enable students to monitor their progress i.e. also use the portfolio as a logbook.

The international schools of pharmacy had not adopted portfolios for their undergraduate programs but did report their usage within the clinical placements. Portfolios (frequently also described as workbooks) were used by the students to provide evidence of competence development and by the placement tutors to assess progress. Portfolios did however tend to form any part of the university's formal assessment processes. USA 2 pharmacy school is

however considering introducing portfolios earlier into the degree programme where students will be expected to record and reflect on their clinical skills development.

## **5.8 Professionalism**

Within the North American schools of pharmacy and the Canadian school, professionalism was identified as an issue at the point of recruitment and students with an appropriate professional attitude were positively discriminated for. Furthermore, it was believed that faculty within the schools were the role models on which students would base their behaviour and therefore signing them up to the process with clearly defined staff expectations was identified extremely important. In all cases, students were given the standards of professional behaviour within their first year and undertook a white coat ceremony where they signed up to their profession. At USA 1 a Student Judicial Council (3 students + 2 faculty) is in place to deal with ethical problems but only if identified and brought to the attention of the Dean. This is similar to the requirements placed on schools of medicine within the UK to have 'fitness to practise' boards in place to deal with unprofessional conduct.

Interestingly, although the Universities took responsibility for ensuring students were aware of the profession's ethical code and legal obligations and that academic staff recognised their importance as role models, the responsibility for assessing environmental and behavioural professionalism was largely held by the clinical placement tutors. This is however entirely appropriate and pragmatic in curricula which have significant placements from early on within the undergraduate degree.

Although details of how professionalism was engendered at the New Zealand and Australian schools of pharmacy were more sketchy it is interesting that in the highlighted Australian school of pharmacy students were registered with their state board from year one of their degree program. This approach removes some of the potential difficulties that arise from non-professionally registered students entering patient settings.

## 6. Points for consideration

- 1) To what extent should preparation for professional role be incorporated into the undergraduate curriculum?
- 2) Should the RPSGB follow the competency agenda for undergraduates?
- 3) If competencies are identified as required for accredited degree programmes Schools of Pharmacy may need to consider adopting pass / fail degree awards.
- 4) The national and international trend is to increase the amount of patient exposure earlier on in the education process.
- 5) On-site pharmacies may not be appropriate or suitable for training unregistered pharmacy students.
- 6) Should clinical skills laboratories which invite patients from the community to receive pharmaceutical care from undergraduate pharmacists be introduced / evaluated?
- 7) A move to a competency based curriculum has significant financial implications.
- 8) Should student preparation for patient exposure be left to the different schools and if not, what is the minimum preparation required?
- 9) What are the aspects of professionalism that are expected of a pharmacist student?
- 10) Placement training requires robust feedback mechanisms from students and independent assessors.
- 11) Procedures should be in place to develop competence in training in pharmacy placement providers.
- 12) Mechanisms should be in place to exclude inappropriate or unsuitable pharmacy training places or tutors.
- 13) The current requirements for 3 years experience before allowing the supervision of pre-registration training students are divergent from models seen elsewhere.
- 14) Collation of evidence of performance in practice for moderation purposes.
- 15) The attitude of placement providers as well as competence to practice and train.
- 16) The Baker criteria for assessing workplace performance in relation to the current quality assurance of UK pre-registration training.
- 17) Proactively requesting student feedback on their pre-registration placement and supervisor and introducing appropriate responses.
- 18) The requirement for teaching methods which develop deeper learning and better application of knowledge within UK schools of pharmacy.
- 19) Greater reliance on MCQs within UK schools of pharmacy if a move to an undergraduate competency agenda is made.
- 20) Format of MCQs in registration exam e.g. extended matching questions.

- 21) The use of pre-test questions in the registration examination.
- 22) The use of a clinical skills log with yearly reflection and personal development planning in UK schools of pharmacy if a move to an undergraduate competency agenda is made.
- 23) The recruitment process of undergraduate pharmacy students and the role of professionalism within this.
- 24) A 'code of conduct/professionalism' for schools of pharmacy.
- 25) A 'white coat ceremony' for new university intakes.
- 26) How to involve academic staff in engendering professionalism.
- 27) Fitness to practise boards within UK schools of pharmacy.
- 28) The need to register undergraduate pharmacy students.

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