

Report to the General Pharmaceutical Council's governing council on the September 2016 registration assessment

1. Introduction

1.1 The initial education and training of pharmacists in Great Britain is:

- A four-year MPharm degree accredited by the GPhC¹; then
- 52 weeks of pharmacist pre-registration training; and
- the GPhC's registration assessment.

1.2 During pre-registration training, trainees are signed-off on four occasions by a designated pharmacist tutor – at 13, 26, 39 and 52 weeks. Trainees must have been signed off as 'satisfactory' or better at 39 weeks to be eligible to enter for a sitting of the registration assessment.

1.3 The registration assessment is an examination with two papers: part 1 (morning) and part 2 (afternoon).

1.4 *Part 1*: The part 1 paper is two hours long (120 minutes) and comprises 40 calculations questions.

1.5 *Part 2*: The part 2 paper is two and a half hours long (150 minutes) and comprises 120 questions: 90 are single best answer questions (SBAs) and 30 are extended matching questions (EMQs).

1.6 Resource packs are provided for candidates, one for each part, and candidates are not permitted to bring any reference sources to the sitting. Examples of resources provided include extracts from reference sources such as the BNF and summaries of product characteristics (SPCs).

1.7 Candidates with a specific need may ask for an adjustment to be made in the conduct of the assessment.

¹ Non-EEA pharmacists wanting to register in GB take a one-year university Overseas Pharmacists' Assessment Programme (OSPAP) instead of an MPharm degree.

2. Reporting to council

2.1 There are two sittings of the registration assessment every year, in June and September, and the board of assessors reports to the GPhC's council after each one. This is the report for September 2016 (including some data from the June sitting for comparative purposes).

3. September 2016 summary statistics

<i>Candidate numbers</i>	September 2016		June 2016 (for comparison)	
	Number	% of total	Number	% of total
Total number of candidates	660	100%	2804	100%
Number of first sitting candidates	393	59.5%	2614	93%
Number of second sitting candidates	135	20.5%	102	4%
Number of third sitting candidates	132	20%	88	3%

<i>Candidate performance – pass rates</i>	Number	%
Overall pass	269	40.76%
Overall fail	391	59.24%
First sitting candidates - pass	187	47.58%
Second sitting candidates - pass	30	22.22%
Third sitting candidates - pass	52	39.39%

3.1 As is always the case, the September sitting was smaller than the June sitting. The most important characteristic of the sitting however is the balance between first, second and third sitting candidates: whereas first sitting candidates predominate in June sittings, September sittings comprise far larger percentages of second and third sitting candidates, that is candidates who were resitting, having been unsuccessful in previous sittings. The concentration of resitting candidates in September sittings does mean that the pass rate tends to be lower than in June.

3.2 The total pass rate for all candidates who sat the registration assessment in 2016 is 84.93%. In previous years, the overall pass rate for the year has ranged between 71.38% and 89.54%.

4. Paper and question analysis

Changes to the 2016 papers

4.1 For the last 2-3 years the board has been developing a revised registration assessment using an evidence-based standard setting process and ensuring the content reflects a more patient-centred focus. This has been to reflect changes in the profession and to

ensure that the assessment remains fit for purpose. The first sitting using the new style was June 2016 and September 2016 was the second.

Question performance

4.2 After the sitting the performance of all questions was analysed and across the two papers and on the basis of question performance, 5 were removed from Part 2. No questions were removed from Part 1.

The balance of questions

4.3 All papers are constructed in accordance with an agreed template: this process is known as blueprinting. The board issued comprehensive guidance on the construction of papers in its registration assessment framework, which can be accessed at www.pharmacyregulation.org/53-registration-assessment-framework. The framework includes guidance on the weighting of syllabus areas and also the inclusion of guidance on therapeutic areas and high risk drugs likely to be covered. The table below confirms that the papers accurately reflected the allocation of weightings in the framework:

Total % of questions - high weighted outcomes	66.3
Total % of questions - medium weighted outcomes	28.1
Total % of questions - low weighted outcomes	5.6

No question can be used in a paper without being assigned to a syllabus area.

Pass rate

4.4 It has been the case for some time that pass rates for the September sitting tend to be lower than those for June sittings. The profile of September sittings is always markedly different from June. This appears to be a consequence of June sittings being almost entirely comprised of first sitting candidates, whereas September comprises far more resitting candidates. An additional factor is that significant numbers of first sitting candidates sat in September either because they chose to withdraw in June or were ineligible to sit at that stage because they may have entered pre-registration training late after having failed MPharm degree assessments (or for other reasons).

4.5 One conclusion that can be drawn from 4.4 is that September cohorts are likely to be weaker because significant numbers have failed elements of their initial education and training already. The reliability index the board uses – Cronbach alpha – shows that the September sitting has reliability in the ‘good’ range, which means that better candidates were more likely to pass than weaker ones and that the sitting was a good reflection of candidate ability.

Comparing questions

4.6 Given the difference in pass rates between the two 2016 sittings, the board undertook a comparison of question performance between the two. While some questions

performed similarly some did not and it was striking that the performance of some similar questions in Part 1 demonstrated significantly weaker performance in September. Two sets of questions are reproduced below as examples. The performance in September suggests that the cohort was weaker than the June cohort.

Question 1

September 2016

A prescriber asks you to prepare 100 g of a 1 in 5 dilution of hydrocortisone butyrate 0.1% ointment. The recommended diluent is emulsifying ointment.

How many grams of hydrocortisone butyrate ointment 0.1% are needed to prepare the requested ointment?

Facility²: 31%

June 2016

A prescriber asks you to prepare 150 g of a 1 in 5 dilution of Locoid ointment. The recommended diluent is emulsifying ointment.

How many grams of Locoid ointment are required for the 1 in 5 dilution?

Facility: 85%

Question 2

September 2016

An 8-year-old boy weighs 28 kg and has hypokalaemia. He requires potassium chloride 2 mmol/kg to be given intravenously over 12 hours. An infusion bag containing potassium chloride 0.3% and glucose 5% is being used to treat his hypokalaemia.

Information on the electrolyte content of various infusion fluids can be found in the extract adapted from the BNF that is provided in your resource pack.

What is the infusion rate in mL/hour required to deliver the prescribed dose? Give your answer to the nearest whole number.

Facility: 55%

June 2016

Child N weighs 12.8 kg and has hypokalaemia. He requires potassium 2 mmol/kg to be given intravenously over 12 hours. An infusion bag containing potassium chloride 0.3% and sodium chloride 0.9% is being used to treat his hypokalaemia.

Information on the electrolyte content of various infusion fluids can be found in the extract adapted from the BNF that is provided in your resource pack.

What is the infusion rate in mL/hour required to deliver the prescribed dose? Give your answer to one decimal place.

Facility: 84%

² 'Facility' is the proportion of candidates who selected the correct answer. It is presented here as a percentage.

September sittings in general

4.7 The board wishes to raise a general point about September sittings which is that the pass rate is likely to continue to be lower than in June due to the different profile of candidates. Now that the board receives enhanced statistical data on performance, its more empirical observations about weak cohort performance are being backed up by objective data. June and September sittings are only three months apart and it is debatable how much a candidate can improve in that time. The board is not suggesting there should be a change in the pattern of sittings at this stage but it will continue to monitor cohort performance in future years to see whether further evidence suggests a change might be in the best interest of candidates.

5. Feedback to candidates

Feedback for candidates will be incorporated into the usual November review of the online pharmacist pre-registration training manual.

6. Feedback from the British Pharmaceutical Students Association (BPSA)

At its meeting on 19-20 October the board considered a report on the September sitting from the BPSA. The report was a constructive and helpful document, which the board welcomed. The BPSA made eight recommendations and the board has prepared a response to each one.

'Recommendation 1: The GPhC should review the number and content of the questions in Paper 1 to ensure candidates are able to attempt the questions in the designated time limit.'

The board's response:

Number of questions: Before introducing the new style Part 1 calculations paper, the format and number of questions was piloted and non-completion was not an issue (neither was it in June). Rather than there being a problem with the Part 1 paper in September, the data suggests that the cohort was weaker compared to June, which may explain why some candidates were unable to complete the paper.

Content of questions: The content of the questions is based on the registration assessment framework, which includes an indicative list of calculations question types for Part 1. Once questions have been written by practising pharmacists they are evaluated by standards setters, again who are practising pharmacists with experience of pre-registration trainees/early years pharmacists, and who verify that the questions are suitable and realistic to be answered by pre-registration trainee pharmacists.

'Recommendation 2: The GPhC should continue to provide formulas for calculations and inform candidates of formulas to memorise and be familiar, working with the BPSA to resolve.'

The board's response: The board's policy on using formulae is that if a relatively complex formula is needed to answer a question it is provided – in the Part 1 paper the Cockcroft-Gault formula was provided, for example. The only other formulas required to answer questions are very simple and should be known and used regularly by trainees in practice – calculating a BMI would be a case in point. After considering the recommendation, the board agreed that it would not be appropriate to provide a list of such simple formulae.

'Recommendation 3: The GPhC should ensure the assessment composes of a proportionate balance of questions from different areas of the framework.'

The board's response: The board follows a blueprint, which sets parameters for the numbers of questions included across syllabus areas: this blueprint is the same for all papers and is always followed. In the registration assessment framework, weightings are assigned to each syllabus area so candidates can judge the proportion of questions there will be on particular topics. Ensuring that topics are covered does not necessarily mean that a question will be set on a specific subject, which is a common misconception by candidates.

'Recommendation 4: The GPhC should prepare a more detailed and accurate framework to prepare pre-registration trainees, and work with the BPSA gaining a better understanding into what makes a detailed framework.'

The board's response: The board has discussed this matter on many occasions and is clear that the framework is set at the right level. The board has resisted requests for a more detailed document deliberately because in its experience such documents tend to be treated as definitive topics/medicines lists by candidates. Pharmacy is so broad that the number of items on such lists would always exceed the number of available questions and it is inevitable that papers can only test a proportion of the total. In the board's experience, seeing an item on a list can create an (incorrect) assumption that knowledge of it will be tested.

Candidates should be reassured that the framework is reviewed annually by the board to ensure that it is up-to-date.

'Recommendation 5: The GPhC should review the time allocated for Paper 2 and review the question format used.'

The board's response:

Time allocation: While not all candidates answered every question in September, there is no verifiable evidence to suggest that the time allocation for Part 2 paper is inappropriate.

Question format: The decision to use single best answer questions and extended matching questions from 2016 was taken by the board after a review of research literature; the evidence indicates they are the most effective way of testing clinical knowledge in written MCQ examinations. The board agreed that having undertaken an evidence-based review of question types so recently there is no reason to do so again.

'Recommendation 6: The GPhC should ensure that the assessment resembles day-to-day practice.'

The board's response: The board strongly agrees with this recommendation and it was one of the principal justifications for revising the format of papers. It is also the justification for using practising front-line pharmacists as standards setters, with a core part of their role being to ensure that all questions are relevant and appropriate.

'Recommendation 7: The GPhC should review the number of SPC questions and ensure the quality of these resources are suitable for candidates in terms of content and ability to use in the assessment.'

The board's response: The board takes care to ensure that the SPCs used in the assessment are common ones. Candidates should know the format of SPCs, because it is standardised, and should, therefore, know where to find information within them.

The 'quality' of SPCs is not something the board can control because they are written by manufacturers.

Spread of artefact questions: Questions requiring the use of artefacts in Part 2 were spread across the paper, from question 3 to question 120. There were 18 such questions in the 90-question single best answer section and eight such questions in the 30-question extended match question section.

'Recommendation 8: The GPhC should provide trainees with more specimen questions, reflecting the actual assessment.'

Board's response: The board will continue to issue example questions. Considering the point about the relevance of example questions to actual questions in papers, the board thinks it is important to make clear that all are written by the same question writers and that all are considered at the same time by the board. This is how the board assures itself that there is equity across example questions and questions used in papers.

On a related point, the board agreed it was important to make clear that there are no differences between questions for June and September papers in that they are commissioned from the same question writers and the writers do not know whether the questions they write will be used in a particular paper.

The board has agreed to contact the BPSA Executive about arranging a follow-up meeting to discuss the registration assessment at greater length.

**Professor Andrew Husband on behalf of the board of assessors
26 October 2016**