

# Setting a standard for CLINICAL ACCURACY CHECKING

■ By A. G. EGGLETON, MSc, MRPHARMS

*There are no national standards to assess the competence of pharmacists involved in checking the clinical accuracy of prescriptions. This article describes an initiative aimed at assessing the competence of clinical accuracy checkers*



*Checking the checkers: are those checking the clinical accuracy of prescriptions competent?*

**P**harmaceutical assessment has been defined as the application of pharmacists' knowledge to establish safety, quality, efficacy and possibly economy, of drug treatment specified by a prescriber.<sup>1</sup> According to the Royal Pharmaceutical Society's Standards of Good Professional Practice within the Code of Ethics for pharmacists, a pharmacist must see and personally undertake a pharmaceutical assessment of every prescription, although delegation of some tasks to suitably trained staff is recognised.<sup>2</sup>

The steady growth of roles and responsibilities for technicians, although partially reflecting the difficulties in recruiting and retaining hospital pharmacists,<sup>3,4</sup> is also a

logical step in the skill-mix review process. Technicians are well-trained individuals who can operate technical services,<sup>5</sup> leaving pharmacists, who are employed primarily for their clinical skills, free to focus on clinical duties.

In recent years, a particular role has developed for pharmacists working in dispensaries where technical staff undertake the management of the dispensing process.<sup>6</sup> It involves checking the clinical accuracy of prescriptions for dispensing. Training and subsequent accreditation of end-checking technicians is well established.<sup>6,7,8</sup>

However, competence-based training for preregistration pharmacy students<sup>9</sup> currently includes no direct assessment of students' clinical ability. The competence of hospital-based trainees in a variety of practical scenarios has, in fact, been cast in doubt by the results of an objective structured clinical

examination (OSCE)<sup>10,11</sup> in which 50 per cent of students failed the prescription monitoring workstation.<sup>10</sup> Equally, it may be difficult to establish clinical competence when a new pharmacist is appointed, since the interview process generally assesses only past achievements and the candidate's performance on the day.<sup>12</sup> Furthermore, locums or "bank" staff are often used to deal with the basic workload so that clinical pharmacists can carry out their ward-based duties.<sup>3</sup> Such staff may not be familiar with some of the clinical specialties in the hospital. It may therefore be a risk management issue to assume that pharmacists are competent to undertake clinical accuracy checking in a hospital dispensary immediately upon registration or appointment.

The quality of clinical practice is the prime focus of clinical governance in the new NHS. To ensure the quality of a clinical

*Mrs Eggleton is senior pharmacist, training and education at Addenbrooke's hospital, Cambridge*

## CLINICAL ACCURACY CHECKING TEST

### Task

1. You have 60 minutes to review the following TEN prescription charts and identify the problems. You have 30 minutes to document your answers  
Total time allowed: 90 minutes
2. You are only able to make ONE intervention per prescription

For each of the TEN prescriptions, using the answer sheets provided:

3. Document the ward and clinical speciality
4. List briefly the endorsements you would make to the chart
5. List briefly the patients' major medical problem(s) suggested by the drug therapy
6. List briefly the most important pharmaceutical problems you would try to resolve if you were checking the chart at ward level (maximum of SIX problems)
7. State the ONE priority intervention you would make for EACH of the ten charts given that you are checking the chart in the dispensary
8. Briefly state the action you would take to resolve the priority intervention
9. State the urgency of the priority intervention from one of the following:

Urgent = chart must be amended by a doctor or pharmacist before being dispensed  
 Less urgent = any other action, such as sending an intervention note to the doctor, highlighting the problem to the ward pharmacist, phoning a nurse or doctor for further information.

### 10. Materials allowed:

BNF	Martindale's Extra Pharmacopoeia
Paediatric formulary	Hospital formulary
Compendium of data sheets and SPCs	Calculator
Trissel's Handbook of Injectable Drugs	Hospital IV monographs
List of wards — specification and current ward pharmacist	

Answers (Candidate name:.....)  
 Prescription number .....

### Review panel:

Ward	Clinical speciality
------	---------------------

### Chart endorsements:

#### Medical problems:

- |    |    |
|----|----|
| 1. | 5. |
| 2. | 6. |
| 3. | 7. |
| 4. | 8. |

#### Pharmaceutical problems:

- |    |    |
|----|----|
| 1. | 4. |
| 2. | 5. |
| 3. | 6. |

Priority intervention number	1	2	3	4	5	6
(circle the appropriate box)						

### Suggested action to resolve the priority intervention:

Urgency:	Urgent	Less urgent
(circle the appropriate box)		

process, there must be a defined standard, combined with a means of ensuring and checking the attainment of that standard.<sup>13</sup> The purpose of the initiative described here was to establish a standard for clinical accuracy checking and a means of ensuring the competence of pharmacists undertaking pharmaceutical assessment duties in a dispensary managed by accredited checking technicians.

## — OSCE

The University of Dundee originally developed the OSCE as a tool for assessing the competence of trainee doctors.<sup>14</sup> OSCEs have been used to test clinical acumen, judgment and practical skills, such as consultations.<sup>12</sup>

The basic structure of the examination was a set of assessment stations where an examiner assessed a range of practical clinical skills according to a previously determined marking scheme.<sup>15</sup> Initially, students were assessed either as competent or not competent in a certain skill but this was later modified to a grading of proficiency against a points scale.<sup>14,15</sup> Overall competence, agreed in advance by the examiners, could be set at different levels according to the seniority of the candidate.<sup>14</sup>

McPherson *et al*<sup>11</sup> used a pre-defined checklist of essential and desirable criteria, and preregistration pharmacy students were deemed competent if they identified all essential criteria without harming the patient. The marking had to be simple, unambiguous and capable of discriminating between a good and a poor performance. The level of competence required to achieve a pass or fail also had to be decided. Preregistration student OSCEs<sup>10,11</sup> have defined a competent candidate as one who has passed a minimum of four out of six workstations, approximating to a 70 per cent pass mark, in line with the the Society's registration examination. Roberts and Norman<sup>16</sup> suggested that pass or fail decisions should not be decided on the basis of an OSCE alone, since the main aim of the examination was a formative evaluation. An OSCE assessment should be supplemented by an early feedback session to the candidate. A satisfactory assessment in the OSCEs could, for example, be supplemented by a portfolio describing significant events, accompanied by a reflective analysis to demonstrate learning points in line with the good practice cycle recommended by the Society.<sup>2</sup>

## — THE TEST

The aims of the clinical accuracy checking test developed at Addenbrooke's hospital were as follows:

1. To develop a structured assessment of competence in clinical accuracy check-

Figure 1: The checking test: candidates are given full instructions on how to complete the test

### Panel 1: Assessment methods

#### Assessment method 1

A competent candidate must not harm the patient and must identify correctly all essential criteria as follows:

- (a) Minimum of 50 per cent of medical problems
- (b) Minimum of 50 per cent of pharmaceutical problems
- (c) Priority intervention
- (d) Suggested action to deal with priority intervention

The priority intervention was the critical element. If this was not correctly identified, the suggested action and urgency were not considered unless harmful to the patient.

#### Assessment method 2

A competent candidate must not harm the patient and must correctly identify the essential criteria as follows:

- (a) Priority intervention
- (b) Suggested action to deal with priority intervention

In both assessments 1 and 2, where two priority interventions were possible, one must be the selected priority intervention and the second intervention must be identified as a pharmaceutical problem.

ing of pharmacists carrying out pharmaceutical assessment of prescriptions

2. To define the minimum accepted level of competence
3. To identify further individual and group training needs

An OSCE-type examination formed the basis of the structured assessment. In this case only one skill was being assessed: the ability to define pharmaceutical care problems on an inpatient medicine chart seen in the dispensary and to prioritise interventions based on their importance. Pharmacists collected at random 10 prescriptions on which a clinical intervention had been made in the dispensary. A review panel was set up comprising four experienced clinical pharmacists, each with at least a postgraduate diploma in clinical pharmacy. The task of the panel members, who specialised in different clinical areas (surgery, medicine, critical care and transplant) was to identify a checklist of desirable and essential criteria for each prescription according to a defined format. The checklist can be seen in Figure 1. The assessment included all pharmaceutical care issues but emphasised a priority intervention possible at dispensary rather than ward level. Sometimes the panel had

Table 1: Final test scores for assessment method 1

Question number	(Y = competent, N = not competent, x = not completed)										
	Candidate number										
1	N	Y	N	N	Y	N	N	Y	N	Y	Y
2	N	N	Y	N	Y	Y	Y	N	N	Y	N
3	Y	Y	Y	N	Y	N	Y	N	Y	Y	Y
4	Y	Y	N	N	N	Y	Y	Y	N	Y	Y
5	N	Y	N	N	Y	N	Y	Y	Y	Y	Y
6	Y	Y	Y	N	Y	Y	x	N	N	x	Y
7	Y	Y	N	N	Y	Y	N	Y	Y	x	Y
8	Y	Y	Y	N	Y	Y	N	Y	N	x	Y
9	x	Y	N	x	Y	Y	Y	N	Y	x	N
10	x	x	Y	N	N	N	N	Y	N	x	Y
Overall score (per cent)	50	80	50	0	80	60	50	60	40	50	80

Note: Results are given in the order that candidates took the test and do not necessarily relate to the same prescriptions

Table 2: Final test scores for assessment method 2

Question number	(Y = competent, N = not competent, x = not completed)										
	Candidate number										
1	N	Y	N	Y	Y	N	N	Y	N	Y	Y
2	Y	N	Y	Y	Y	Y	Y	N	N	Y	N
3	Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y
4	Y	Y	Y	N	N	Y	Y	Y	N	Y	Y
5	N	Y	N	Y	Y	N	Y	Y	Y	Y	Y
6	Y	Y	Y	N	Y	Y	x	Y	Y	x	Y
7	Y	Y	N	Y	Y	Y	Y	Y	Y	x	Y
8	Y	Y	Y	Y	Y	Y	Y	Y	Y	x	Y
9	x	Y	N	x	Y	Y	Y	N	Y	x	Y
10	x	x	Y	N	Y	N	N	Y	N	x	Y
Overall score (per cent)	60	80	60	60	90	60	70	70	60	50	90

difficulties agreeing on just one priority intervention. Where two potential priority problems were identified, it was decided that a competent candidate must prioritise one of them and identify the other one as a pharmaceutical care issue. Action was defined as "urgent" where a doctor or pharmacist must amend the prescription before it was dispensed, such as an illegal Controlled Drug prescription. Any other actions, including those involving the ward pharmacist, were classified as "less urgent".

To validate the test, nine employee hospital pharmacists, one locum pharmacist and one preregistration student were asked to attempt the checking test consisting of 10 reviewed prescriptions. The candidates' year of registration, possession of a clinical qualification, dispensary and ward pharmacy commitments were noted. The assessor gave full verbal and written instructions to each candidate and provided a sample prescription as a demonstration. Candidates working in simulated dispensary conditions with background noise were allowed 90 minutes to assess the prescriptions and document a

response using the standard format (Figure 1). Standard reference texts, the hospital formulary and IV guide, a list of ward specialities and a calculator were made available.

Performance was assessed using the checklist of criteria decided by the review panel. Overall competence was defined as a pass in seven of the 10 prescriptions. Two different assessment methods were used (Panel 1).

### ASSESSMENT AND FEEDBACK

Clinical governance makes quality a prime focus of the NHS and it involves setting standards, monitoring performance, audit, lifelong learning and the sharing of best practice.<sup>13,17</sup> The development of the clinical accuracy checking assessment at Addenbrooke's hospital has provided an opportunity to put this into practice. Setting a standard by which clinical accuracy checking can be audited is important. The clinical accuracy checking assessment, similar to an OSCE, provides an objective measure of this skill.<sup>10</sup>

Table 3: *Details of candidates*

Candidate number	Ward pharmacy commitment (projected or current)	Regular dispensary commitment (projected or current)	No Possession of a clinical qualification
1	Yes		
2	Yes	Yes	No
3	Yes	Yes	No
4	No	Yes	No
5	Yes	Yes	No
6	Yes	Yes	Yes
7	Yes	No	Yes
8	No	No	Yes
9	Yes	No	Yes
10	Yes	Yes	No
11	Yes	No	Yes

The results are shown in Table 1 (assessment method 1) and Table 2 (assessment method 2). Individual details of year of registration are not shown so as to guarantee anonymity. The post-registration experience of candidates ranged from 0 (for the one candidate nearing the end of the preregistration year) to 26 years, with a mean of 11 years.

Table 3 gives an indication of the ward and dispensary commitment of each candidate, and any clinical qualifications which they had.

Using the first assessment method, eight of the 11 candidates (73 per cent) failed to reach the defined level of competence. In the setting of a busy dispensary, however, the essential clinical skill is to identify clinically significant interventions and deal with them effectively without there being any harm to the patient.

The second assessment method, which may reflect more accurately the required minimum standard, enabled 46 per cent of candidates to achieve competence set at 70 per cent and 91 per cent of candidates to achieve competence set at 60 per cent. This might be the practical target at which to aim.

At the beginning, it was emphasised to candidates that the main purpose of the test was to identify training needs and subsequently to assist the individual in meeting those needs. Therefore, performance feedback from the test was vital. The assessor checked the answers and gave verbal feedback, using careful questioning to establish whether candidates understood those points which had been omitted. This feedback session could constitute a supplementary oral examination preceding the final decision on competence for borderline candidates. For example, further questioning of candidate 4 revealed that important pharmaceutical care issues, although described orally by the candidate, had not been documented during the test. It was decided that candidates would be

deemed competent following the assessment if:

- 1 They achieved a minimum grade of 70 per cent
- 1 They achieved a minimum grade of 50 per cent and performed to a satisfactory standard in the supplementary oral examination

Individual learning points arising from the test were explained and supplemented where necessary by additional training. This was of particular value for candidates achieving a score of less than 50 per cent. Omissions in the test immediately highlighted individual training needs, and could be expanded to group training needs where they overlapped between candidates. Appropriate internal learning resources were often available, and could be directed effectively. This was an important consideration given the limits imposed by finances and staffing levels.<sup>14</sup>

Candidates criticised the time limit set for the test. However, this reflected the true situation where customer demand limited the time available for the dispensing process. Hence, no change in the time limit was considered necessary. Other criticisms were that all prescriptions required an intervention and that there was a high number of complex prescriptions. These remain to be investigated in further validation work.

Sharing of best practice is enabled through active participation in the review panel meetings to define essential and desirable information relating to each prescription. All participating pharmacists felt they had learnt from the experience.

#### TRAINING NEEDS

Omissions in prescription assessments enabled identification of training needs for each individual as illustrated in Table 4. These were amalgamated to identify group

training needs. The global training areas identified included the following:

- 1 Drug contraindications, particularly in asthma sufferers
- 1 Drug-drug interactions, particularly of antimicrobials
- 1 Licensed indications of drugs
- 1 Appropriate monitoring of drugs with a narrow therapeutic window
- 1 Restricted formulary drug issues
- 1 Transplant treatment protocols
- 1 Seamless care issues
- 1 Monitoring of drugs with a potential for drug-disease interaction or adverse drug reactions

Outside of competence in clinical accuracy checking, all pharmacists require ongoing training. Continuing education tends to be expensive and access may be limited by the departmental training budget or lack of staff cover.<sup>18</sup> One possible approach, therefore, is to appoint a continuing professional development (CPD) mentor<sup>19</sup> to facilitate personal development. Options for supplementary in-house training include work shadowing, suggestions for directed reading, computer packages, elements of formal taught courses and working through appropriate case studies. For example, at Addenbrooke's hospital, work shadowing could be arranged with the transplant directorate pharmacist. The formulary pharmacist could reinforce the position on restricted formulary drugs. Seamless care issues could be examined by looking at self-medication wards. Pharmacists could be directed to appropriate journal articles on drug-drug interactions, especially those involving antibiotics.<sup>20</sup> The mentor should also encourage pharmacists to maintain a portfolio of checked prescriptions which demonstrate learning points.

#### PHARMACEUTICAL CARE

According to the Steering Committee on Pharmacy Postgraduate Education (SCOPE),<sup>21</sup> pharmacists providing care to NHS patients must update their knowledge and develop their skills continually. Clinical accuracy checking in the dispensary forms an integral part of the pharmaceutical care process, since it targets the identification of potential and actual drug-related problems to produce a favourable outcome for the patient. This programme aims to improve the quality of pharmaceutical care by:

- 1 Setting a defined minimum standard for clinical accuracy checking pharmacists
- 1 Providing a reliable means of audit to ensure standards are maintained
- 1 Highlighting a wide range of pharmaceutical care issues
- 1 Providing feedback to facilitate reflective practice

- 1 Identifying pharmacists' individual training needs and targeting limited resources
- 1 Promoting a culture of lifelong learning among pharmacists

### FUTURE DEVELOPMENT

Following this initiative, internal training has been planned to improve clinical knowledge and decision-making skills for all pharmacists and preregistration students by the introduction of:

- 1 A review panel meeting for senior pharmacists to take place once every two months
- 2 A bi-monthly training meeting supervised by a clinical pharmacist using the reviewed prescriptions as a training tool for junior pharmacists and preregistration students

Prescriptions, so far selected at random, will be chosen to target existing training needs, such as transplant and oncology protocols. Future learning will be directed towards new areas of clinical practice, new drugs or treatment protocols as they emerge from the National Institute for Clinical Excellence.<sup>8</sup> New pharmacists employed to work in clinical accuracy checking will be required to meet the minimum standard of competence. Training will be offered where competence is not achieved and the test repeated. Clinical accuracy checking standards for all pharmacists will be audited annually.

*A checking exercise by Mrs Eggleton is planned for Hospital Pharmacist in the near future*

### REFERENCES

1. Council of the Royal Pharmaceutical Society of Great Britain. Consultation document. Making best use of pharmacists and their support staff. *Pharm J* 1998;260:743-5.
2. Medicines, ethics and practice: a guide for pharmacists (23). London:Royal Pharmaceutical Society of Great Britain;2000.
3. Cooke P. What pharmacy managers can do to retain staff. *Hosp Pharm* 2000;7:2.
4. National hospital pharmacy recruitment and vacancy survey 1997-8. NHS Pharmacy Education and Development Committee;1998.
5. The state of hospital pharmacy. *Hosp Pharm* 1999;6:300-1.
6. Keller-Henman N. Pharmacy technicians take charge of the hospital dispensary. *Hosp Pharm* 1999;6:281-2.
7. Hancox D, McIntoch J. The South Thames checking technician accreditation course. *Hosp Pharm* 1998;5:63-4.
8. Brackley K, O'Loan L, Evans D. North

*Table 4: Individual training needs assessment*

Question number	Candidate number										
	1	2	3	4	5	6	7	8	9	10	11
1	CD		R	CI		F	F		F		
	CI			M							
	D			F							
2	F	CI		CI				CI	DI		CI
	DI	DI		CR				D			
3				D		CR		CI			
				M							
4			IV	DI	CI				DI		
			D						A		
			M						D		
5	P		SC	DI		R					
			DD	G		M					
6			CD	A			x	SC	IV	x	
			CI								
7				G						x	
8			DI	A			SC		SC	x	
			DD	CI					DD		
			D						M		
9	x		D	x				DI		x	CI
10	x	x		D		CI	CI		CI	x	
				G							

**Key:**  
A = Drug allergy not considered  
CD = Controlled drugs' legal requirements  
CI = Contraindication  
CR = Change of dose for different formulations of the same drug  
D = Problem with dose or indication of a specific drug  
DD = Drug-disease interaction  
DI = Drug-drug interaction  
F = Formulary issues  
G = Standard treatment guidelines not followed  
IV = Intravenous drug administration  
M = Monitoring required  
P = Paediatric dosing  
R = Dosing in renal impairment  
SC = Seamless pharmaceutical care issues  
x = Prescription not completed

- Thames dispensing accuracy scheme. *Pharm J* 1999;263:R63.
9. Preregistration training manual 1999. London:RPSGB;1999.
10. McRobbie D, Davies G. Assessing clinical competence — a new method of evaluating hospital preregistration trainees. *Pharm J* 1996;256:908-10.
11. McPherson G, Davies G, McRobbie D. Preregistration trainee clinical competence: a baseline assessment. *Pharm J* 1999;263:168-70.
12. Wood L, O'Donnell E. Assessment of competence and performance at interview. *BMJ* 2000;320:2.
13. Clinical governance. *Hosp Pharm* 1999;6:288-9.
14. Harden RM, Stevenson M, Downie WW, Wilson GM. Assessment of clinical competence using objective structured examination. *BMJ* 1975;1:447-51.
15. Selby C, Osman L, Davis M, Lee M. How

- to do it: set up and run an objective structured clinical exam. *BMJ* 1995;310:1187-90.
16. Roberts J, Norman G. Reliability and learning from objective structured clinical examination. *Med Educ* 1990;24:219-23.
17. McCreedy C. "The new NHS: modern, dependable" — but is it good for pharmacy? *Pharm J* 1999;262:88-91.
18. Cairns C. Study leave and the hospital pharmacist. *Hosp Pharm* 2000;7:24-6.
19. Grout C, Dorey J, Hough J. Continuing professional development for pharmacists: a strategic approach. *Pharm J* 1999;263:R71.
20. Adams P. Drug interactions that matter (3) Antibiotics. *Pharm J* 1998;261:779-83.
21. Steering Committee on Pharmacy Postgraduate Education (SCOPE). A continuing education strategy for NHS pharmacists in England. London:HMI Stationery Office;1994.