

## Clinical experience of clerks and dressers: a three-year study of Birmingham medical students

D N J Lockwood BSC MB L H Goldman BA MRCGP *Student representatives, Medical Education Subcommittee, The Medical School, University of Birmingham* I C McManus MD PhD *Lecturer in Psychology as Applied to Medicine, St Mary's Hospital Medical School, London W2*

### Summary

A survey of the clinical experience of junior medical clerks and surgical dressers on their first clinical attachment in the Birmingham University Teaching Hospitals was organized by students over a three-year period. A typical clinical student had performed basic clinical procedures such as putting up a drip, doing an ECG, bladder catheterization and seen a wide range of other procedures. Most students felt involved in the work of the firm, had clerked routine admissions, and regularly attended the firm's emergency admission night. Consultants on most firms were felt to be concerned about student progress. Students attached to district general hospitals gained a wider range of clinical experience than those at established teaching hospitals. Student-run audit is a useful way of monitoring the clinical experience gained by medical students.

### Introduction

The first clinical attachment of a medical student is one of the most important periods in his training and his initial experience may determine his attitudes towards medicine for a long time<sup>1</sup>. However, there is little available data about how much teaching junior clinical students receive or what sort of practical experience they are gaining during their first attachment. As junior clinical students we felt it was not unreasonable that medical teaching be subjected to some form of audit from the student perspective.

The clinical course at Birmingham University Medical School starts with a month-long introductory course. This is followed by two 5-month attachments in general surgery and general medicine, half the students starting with medicine, half with surgery. Students are allocated in groups of three or four to firms consisting of one or two consultants and their junior staff, and receive teaching based around the patients of that firm. The student spends each morning with the firm and returns to the medical school in the afternoon for lectures. Students cannot choose their particular attachments.

A student will attend a single firm at one of five Birmingham city hospitals for his 5-month attachment. Two of these hospitals are the established 'teaching hospitals': one on the edge of the university campus, the other in the city centre. The other three hospitals are district general hospitals sited in the southern, western and eastern parts of the city.

The general feeling among students is that one gains wider experience and sees common conditions more frequently in the district general hospitals.

However, the two central hospitals are the established teaching hospitals where one might expect to find more enthusiasm for teaching.

In our audit we aimed to find out what teaching students received, what practical work students did, what their feelings about the firm were and how they felt influenced by attitudes of staff towards teaching and students. We were also particularly interested in comparing the different hospitals attended by junior clinical students.

### Method

A survey was carried out for three consecutive years commencing in February 1977. Over the three-year period, 325 questionnaires were completed and returned, giving an overall response rate of 66%. A small number of students failed to answer a few questions. Results were obtained for 22 medical firms and 16 surgical firms in the five hospitals.

The questionnaire, which was designed by a group of students, focused on three areas: the nature of the teaching students received, the practical experience gained by students, and their subjective evaluation of their attachment. Space was provided for comments, which were particularly invited about the questionnaire itself, points omitted, particular faults of the firm and the general problems of being a clinical student. Respondents were reassured that all information given would remain strictly confidential.

The results for each firm have been summed over the three-year period to give an overall result, thus avoiding bias due to particular groups of students in a single year conflicting with the staff on a firm.

The results have been presented in the medical school, no particular firm having been identified except to the professors of medicine and surgery. The hospitals were numbered from 1 to 5, hospitals 1 and 2 being teaching hospitals and hospitals 3, 4 and 5 being 'peripheral' hospitals. Consultants were invited to write to the organizers of the survey for results relating specifically to their own firm.

In this paper we report the data on the practical experience gained by students and their subjective evaluations of the firms.

### Results

#### *Practical procedures*

Students were asked whether they had ever seen or performed, alone or with supervision, a number of practical procedures (Table 1).

Among medical clerks ( $n=170$ ), almost all (96.3%) had seen a drip put up, and 61.1% had performed this

Table 1. Percentage of students seeing and performing practical procedures

	Clerks					Dressers				
	Teaching hospitals		Peripheral hospitals			Teaching hospitals		Peripheral hospitals		
	1	2	3	4	5	1	2	3	4	5
Putting up a drip	47.4	31.5	72.0	85.7	75.8	69.3	91.3	73.1	100	70
Performing bladder catheterization	31.6	14.3	12.0	45.7	20.7	46.2	65.2	65.4	87.5	64.7
Seeing cardiac resuscitation	65.0	70.0	92.9	81.8	85.7	11.1	15.4	46.7	26.7	27.3
Seeing arterial blood sampling	80.0	65.0	85.7	95.5	85.7	40.7	46.2	46.7	53.4	36.4
Testing urine	70.0	65.0	35.7	59.1	52.4	14.8	7.7	26.6	13.4	18.2
Recording an ECG	73.7	31.5	96.0	91.4	86.2	42.2	20.6	42.8	57.2	37.2
Seeing pleural aspirations or abdominal paracentesis	68.9	74.3	80.0	85.7	58.6	38.4	52.2	46.1	50.0	58.8
Seeing sigmoidoscopy	39.5	62.9	92.0	34.3	48.3	92.3	100	100	95.8	88.2
Seeing endoscopy	63.2	62.9	76.0	54.3	37.9	40.4	65.2	65.3	45.8	94.1
Seeing lumbar puncture	63.1	62.9	80.0	80.0	62.1	31.0	6.9	10.3	31.0	20.7
Seeing liver/kidney biopsy	44.7	62.9	44.0	42.9	55.2	11.5	47.8	50.0	20.8	47.1
Performing endotracheal intubation	0	5.0	7.1	4.5	14.3	37.0	38.5	6.7	33.3	18.2
Seeing bone marrow aspiration	36.8	20.0	40.0	68.6	31.0	7.7	21.7	23.1	8.3	0
Number of students attending firms at hospital	38	35	25	35	29	52	23	26	24	17

task. Almost all had seen an ECG done (97.5%) and 73.4% had recorded one; 74.1% had seen and 26.6% had performed bladder catheterization; 69.1% had seen a lumbar puncture; 73.5% had seen a pleural aspiration or abdominal paracentesis; 50% had seen a kidney or liver biopsy; 39.5% had seen a marrow biopsy; 58% had seen endoscopy; 71.4% had seen cardiac resuscitation; 82.5% had seen arterial blood sampling. A small number had actually performed lumbar puncture, pleural aspiration or abdominal paracentesis and arterial blood sampling.

Almost all surgical dressers ( $n=151$ ) had seen a drip put up (98.6%) and 78.9% had performed this task; 92% had seen bladder catheterization and 61.9% had catheterized a patient; 95.1% had seen sigmoidoscopy, 56.3% endoscopy and 91.4% endotracheal intubation.

Surprisingly few students had performed routine urine testing: 57.7% of clerks and 16.1% of dressers had done so, while 28.9% of clerks and 66.7% of dressers had never even seen routine urine testing. Conversely, it is worth noting that 24.6% of dressers and 6.8% of clerks had performed a bladder catheterization without supervision.

The experience of medical clerks varied considerably from hospital to hospital as shown in Table 1. At hospitals 1 and 2 the percentage of students with experience of the six practical procedures is consistently below average, whilst at hospitals 3 and 4 this percentage is consistently above average.

Thirty-seven clerks and 51 dressers attended hospital 1, of whom 4 clerks and 2 dressers never saw a drip put up. Hospitals 2 and 5 were attended by 35 and 25 clerks respectively; at both hospitals there was one clerk who never saw a peripheral line inserted.

Among surgical dressers the experience was not quite so varied, as Table 1 shows, although the percentage of dressers who put up drips or performed

bladder catheterization at hospital 1 was well below average. However, more dressers at hospital 1 had performed intubations than at any of the other hospitals.

#### *Clerking routine admissions and outpatients*

When surgical and medical firms are compared, it is clear that on surgical firms the students are far more involved in the clerking of routine admissions and outpatients. Overall, 94.9% of dressers were allowed to clerk routine admissions compared with 62.9% of clerks. Table 2 gives the percentages of clerks and dressers at each hospital who clerked patients for routine admissions and in outpatients. There is little difference between the hospitals in the amount of clerking that students did. There is however considerable variation between medical firms: on 10 firms more than 75% of students clerked routine admissions while on 4 firms less than 25% did so.

Overall, 57.4% of surgical dressers clerked outpatients compared with only 24% of medical clerks. Table 2 shows that there is considerable variation between hospitals, some hospitals using students a lot in outpatients, others very little, if at all. There were just 4 medical firms on which more than 50% of students were allowed to clerk outpatients, one at hospital 4 and three at hospital 5. Among surgical firms, all firms at hospitals 2 and 3 had more than 50% of dressers clerking outpatients, along with three of the five firms at hospital 1. Less than half the dressers, however, on all six firms at hospitals 4 and 5 were allowed to clerk outpatients.

#### *Experience on 'take'*

Junior students are expected to attend at night when their firm is responsible for emergency admissions to the hospital ('take' night). Most students attend their firm's emergency 'take' night once every two

Table 2. Students and the clinical team

		Hospital				
		1	2	3	4	5
% students feeling part of the clinical team	Clerks	30.6	66.7	65.2	66.7	62.1
	Dressers	45.8	71.4	84.0	78.3	88.2
% students clerking routine admissions	Clerks	55.0	61.1	54.5	78.9	61.9
	Dressers	88.0	100	100	100	90.9
% student clerking outpatients	Clerks	10.3	5.9	16.0	39.3	51.7
	Dressers	54.0	90.5	84.6	13.6	41.2
% students impressed by standard of patient care	Clerks	65.7	87.9	85.7	88.9	78.6
	Dressers	81.8	95.5	84.0	90.0	93.8
% students encouraged to find out about paramedical workers	Clerks	73.7	17.6	73.9	40.0	37.9
	Dressers	47.1	9.5	75.0	41.7	12.5

weeks. The majority of students find that the experience gained by attending 'take' nights is always or usually useful.

Most students (96% clerks, 93% dressers) attended the firm 'take' night alone or with one other student, and 81.6% of medical clerks and 87% of surgical dressers were allowed to admit patients on 'take' nights. Tables 3 and 4 give further details about the experience of junior students on 'take'.

Hospital 1 stands out in these tables. Students in both medicine and surgery attended on 'take' less often, and found their attendance less useful than at

the other 4 hospitals. Fewer of the students are allowed to admit patients accepted by hospital 1 as emergency admissions.

#### Medical students as phlebotomists

Two of the five hospitals to which students were attached (hospitals 3 and 5) employed professional phlebotomists. At the other three hospitals junior clerks and dressers are often expected to act as phlebotomists for their firm each morning. Students were asked to estimate how many hours a week they spent taking blood and whether this was too much or not.

The relationship between hours spent taking blood and student satisfaction (Figure 1) suggests that between 70% and 80% of students would be happy 'doing bloods' for between 2 and 3 hours a week. It is questionable whether students should be expected to spend more than 3 hours a week taking blood since they are attending hospitals only in the morning.

#### Involvement with the clinical team

Overall, students were impressed by the standard of patient care (79.7% of medical clerks and 89.4% of surgical dressers). Table 2 gives the results for each hospital. There were 7 firms – all medical – on which 25% or more of the respondents were not impressed by the standard of patient care. There were no firms on which all respondents were not impressed by the standard of patient care. There were 15 firms (8 medical, 7 surgical) on which the clerks or dressers were uniformly impressed by the standard of patient care.

Table 3. 'Take' experience of medical clerks and surgical dressers

	% clerks	% dressers
<i>Frequency of attendance</i>		
More than once a week	13.0	15.7
Once a week	21.1	15.0
Once every 2 weeks	51.6	43.6
Once every 3–4 weeks	12.4	12.9
Less than once every 4 weeks	1.9	12.9
<i>Usefulness of 'take' experience</i>		
Always (90–100% of time)	27.5	31.2
Usually (50–90% of time)	46.9	38.4
Sometimes (10–49% of time)	23.1	15.2
Rarely (less than 10% of time)	2.5	15.2

Table 4. 'On-take' experience by hospital attachment

		Hospital				
		1	2	3	4	5
% students attending 'on-take' less than once every 2 weeks	Medicine	39.5	2.9	4.2	0	20.7
	Surgery	62.0	8.7	0	8.3	5.9
% students finding attendance 'on-take' usually or always useful	Medicine	48.6	70.5	80.0	91.4	86.2
	Surgery	28.6	86.9	92.3	95.9	93.8
% students allowed to admit patients 'on-take' nights	Medicine	60.5	78.1	96.0	97.1	82.1
	Surgery	66.7	100	100	100	94.1

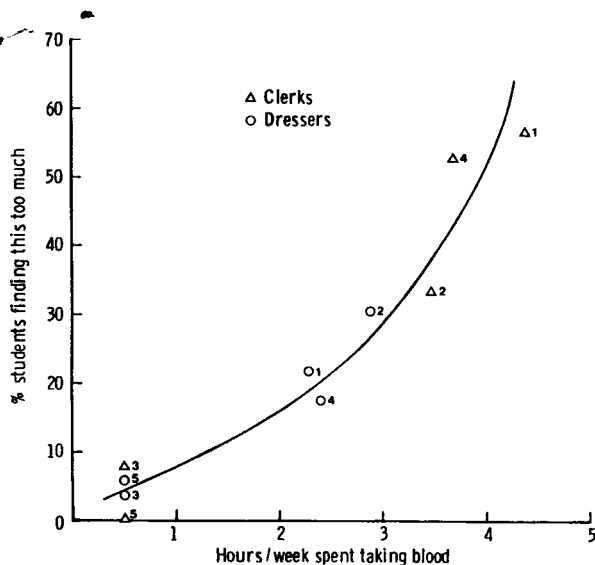


Figure 1. Relationships between hours per week spent by students taking blood and percentage of students finding this too much. Points have been plotted separately for clerks and dressers at each hospital; the curve between the points has been drawn freehand

Students were also asked whether during their period as clerk or dresser they were made to feel part of the clinical team. One might expect responses to reflect the degree to which students were involved with the day-to-day practical work of the firm and with its emergency work. Overall 57% of clerks and 67.9% of dressers felt that they were part of the clinical team. Table 2 sets out the responses from the clerks and dressers at the various hospitals.

#### Relationships with consultants

Most students felt that they got on well with their consultants (90.8% of medical clerks and 94.9% of surgical dressers). There was little variation between hospitals. Slightly fewer (81.8% clerks, 87.1% dressers) felt that their consultants were concerned about the progress of students on their firm, although there was considerable inter-firm variation. On 18 firms (9 medical, 9 surgical), all students felt that their consultants were concerned with student improvement, but on 7 firms (3 medical, 4 surgical) more than one-third of students felt consultants were not concerned with the progress of their clerks and dressers. On the medical firms two were at hospital 1 and one at hospital 5. Of the surgical firms one was at each hospital apart from hospital 2. On one surgical firm 75% of students felt that the consultants were not concerned about student progress, though all students felt that they 'got on well' with the consultants.

#### Involvement with paramedical workers

Less than half of clerks and dressers felt that they had been encouraged to find out about the work of paramedical workers at their hospital. Table 2 shows the variation between hospitals in this respect. Hospitals 2 and 5 in particular seem to give medical students little encouragement to find out about work in this important field.

#### Discussion

The average Birmingham student will in his first five months on the wards have attended 'on-take' at

least once a fortnight, will have found his 'on-take' experience useful and will have admitted patients accepted as emergencies. The average medical clerk will have put up a drip, performed an ECG, seen bladder catheterization, lumbar puncture, a kidney or liver biopsy, arterial blood sampling and endoscopy. Most clerks will also have seen cardiac resuscitation. The average dresser will have put up a drip, catheterized a patient, and seen endoscopy, sigmoidoscopy and endotracheal intubation. The Todd report<sup>2</sup>, in its survey of British medical students, found that 42.1% of final year students had performed a lumbar puncture at least once, and 21.4% had performed an abdominal or pleural paracentesis. The comparable figures for Birmingham students who have spent only 5 months on the wards are 14.1% for lumbar puncture and 11.6% for abdominal or pleural paracentesis. This suggests that Birmingham students are obtaining a fairly wide range of experience in various practical procedures early in their course.

Norwegian clinical students<sup>3</sup> completing their first clerkship have a similar degree of exposure to practical procedures as Birmingham students. The most striking differences were in performing cardiac resuscitation (Birmingham clerks [BC] 17%; Norwegian clerks [NC] 57%), seeing arterial puncture for blood gases (BC 82%; NC 37%) and urine testing (BC 58%; NC 95%).

Birmingham dressers have similar experience of practical procedures as their Canadian<sup>4</sup> and American<sup>5</sup> counterparts. However, only 23% of Birmingham dressers have seen cardiac resuscitation, whereas 80% of American and 37% of Canadian dressers have performed cardiac resuscitation. Furthermore, 60% of dressers in Florida<sup>5</sup> have performed sigmoidoscopy compared with 11% of Birmingham dressers.

It is not clear why Birmingham clerks and dressers should have such relatively low exposure to cardiac resuscitation. None of the other studies suggests that students elsewhere are spending more time on call than Birmingham students. These differences may reflect either different resuscitation policies or, perhaps more prosaically, merely the fact that junior students in Birmingham are not given cardiac arrest bleeps.

The experience of doing practical procedures is important, not only as an object in itself but also because later in training and professional life one is frequently required to explain diagnostic and therapeutic procedures to patients. Light<sup>6</sup> has suggested that skill in practical procedures may be one mechanism whereby medical students control anxieties generated by the complexity of medical teaching. Others<sup>4</sup> have suggested that skill in practical procedures increases willingness to act promptly when alone in new situations.

The differences in practical experience gained by students at the various hospitals have been noted. Students at the three district general hospitals gained a much wider range of clinical experience than those at hospitals 1 and 2. Wakeford<sup>7</sup> also reported that in Cambridge, students in peripheral hospitals had more experience of practical procedures than those in teaching hospitals. In Cambridge, as in Birmingham, students felt that they were more part of the firm when in 'peripheral' hospitals than in teaching hospitals. However, 'feel-

ing part of the clinical team' seems not to depend solely on the performance of practical procedures (Table 2). Quite how much first-year clinical students can be involved in the work of a firm is uncertain, but in terms of providing motivation to learn, a feeling of involvement did seem to be important to students and was reflected in many of their written comments. Several said that they had not been encouraged to do practical procedures; as one student wrote, 'It seems that the ones who do not "push themselves" never get a chance to do such important things' (dresser, hospital 4). This feeling of lack of encouragement extended beyond merely not doing practical procedures on some firms, and was reflected in such comments as 'I would have got on a lot better if it had appeared that anyone was bothered about what I did and learnt' (dresser, hospital 1); 'It seemed the firm was unaware of a responsibility to teach us, and we were left to find out things for ourselves most of the time' (dresser, hospital 4).

Several students noted that they received little guidance when examining patients: 'We were never watched whilst examining anyone so that our technique was not criticized' (clerk, hospital 5); 'I felt very unsure in the history taking and examination (admission) of patients. I am still waiting to be shown how to perform a thorough examination of a patient' (dresser, hospital 2).

Educational objectives in clinical medicine are somewhat vague. Many students commented that they were unsure what was expected of them. 'The teaching was very erratic. You were almost left to fend for yourself' (clerk, hospital 2).

Perhaps a minimum set of skills for clerks/dressers to acquire, and the means for achieving this, should be agreed upon. That students are left to conjecture which skills they should acquire is not satisfactory. Cognitive dissonance theory<sup>8</sup> would predict that if a student feels a skill is necessary and is difficult to acquire, then he will either exert himself to acquire the skill or change his view so that he need no longer acquire the skill. Thus educational objectives would be valuable to students. In this survey students also frequently commented on the time and effort involved in returning to the medical school for lectures each afternoon, many students obviously preferring to spend all day in hospital. It is also worth stressing that a recurring theme was that students had enjoyed themselves on their first firm.

Surveys of student experience can be useful in showing medical teachers how much variability there is in clinical experience. The authors of both the Norwegian<sup>3</sup> and Canadian<sup>4</sup> surveys felt that students were receiving relatively little experience in some important techniques and recommended that instruction in technical procedures should be carried out on a planned basis.

Whilst the primary aim of our survey was to improve clinical education locally, we also wished to show that clinical teaching can be subjected to medical audit. Regular audit can undoubtedly change practice<sup>9</sup>, in both hospitals and in primary care, and in the study of Lazaro *et al.*<sup>4</sup> the number of students carrying out particular procedures was found to rise markedly over a 3-year survey period, suggesting that feedback can influence teaching, particularly if combined with self-audit techniques such as checklists<sup>10</sup>. Thus audit of clinical teaching when carried out in a systematic, impartial way can be used to monitor and subsequently to influence teaching.

*Acknowledgments:* We wish to thank the many people who helped with this study; our fellow student representatives Jill Taylor, Clare Goodhart and Tony Hall-Jones helped to collect the data. Dr Wilhelmina Lockwood and Miss Laura Lockwood devoted many hours to coding questionnaires. Ms Ann Hurman, Professors F Ashton, Sir Geoffrey Slaney and Sir Raymond Hoffenberg encouraged us and provided helpful criticisms. We also thank all the students who completed questionnaires and thus made this study possible.

## References

- 1 Benbassat J, Cohen R. Clinical instruction and cognitive development of medical students. *Lancet* 1982;i: 95-7
- 2 Royal Commission on Medical Education 1965-68. Cmnd. 3569 London: HMSO, 1968
- 3 Hunskar S, Sein SH. Assessment of students' experiences in technical procedures in a medical clerkship. *Med Educ* 1983;17:300-4
- 4 Lazaro EJ, Rush BF, Blackwood JM, Swaminathan AP. Assessment of student experiences in technical procedures in surgical clerkship. *Can J Surg* 1978;21: 540-1
- 5 Linn BS, Zeppa R. Effects of the surgical clerkship on student perception of essential skills and self-assessed abilities. *Ann Surg* 1982;195:50-4
- 6 Light D. Uncertainty and control in professional training. *J Health Soc Behav* 1979;20:310-22
- 7 Wakeford RE. Undergraduate students' experience in 'peripheral' and 'teaching' hospitals compared. *Ann R Coll Surg Engl* 1983;65:374-7
- 8 Festinger LA. *A Theory of Cognitive Dissonance*. Evanston: Illinois, 1957
- 9 Ruckley CV. Mechanisms of audit: discussion paper. *J R Soc Med* 1984;77:40-4
- 10 Hunskar S, Sein SH. The effect of a checklist on medical students' exposures to practical skills. *Med Educ* 1984;18:439-42

(Accepted 20 March 1985. Diana Lockwood is now SHO Thoracic Medicine, London Chest Hospital, London E2; and L H Goldman a general practitioner in Shipley, West Yorkshire. Correspondence to DNJL, 27A Barnsbury Street, London N1 1PW)