

# Consultation skills of medical students before and after changes in curriculum

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## SUMMARY

The University of Manchester Medical School has adopted problem-based learning as its main educational method, with a change of emphasis from a biomedical to a biopsychosocial approach. The training of junior medical students in clinical interviewing is intended to reinforce and develop their interpersonal skills. We measured the impact of this new curriculum by assessing two intakes of students covering the period before and after its introduction; a third intake was later added to examine the effect of further curriculum adjustments. 86 students, randomly selected, were videorecorded conducting diagnostic interviews with standardized patients 10 weeks after they had started to learn clinical interviewing. Two instruments were developed—a 23-item communication skills scale and a 13-item information-gathering scale and both showed acceptable inter-rater and test-retest reliability.

Communication skills did not differ between years. The total score for information-gathering fell by 13% (95% confidence interval –20 to –6%,  $P < 0.001$ ) in the first year after introduction of the new educational approach but returned to baseline the following year after further modification of the course.

Although the new approach yielded no measurable improvement in the process of communication, assessment 10 weeks after the start of interview training may be too early to permit definitive conclusions. We conclude that it is possible to change to a more patient-centred emphasis in teaching medical interviewing. Some initial loss of information content was rectified by adjustment of the course. Our unfavourable early experience highlights the need to evaluate educational change.

## INTRODUCTION

As medical students, the only teaching in communication skills that most of today's clinical teachers received was 'how to take a complete history'. Teachers tend to perpetuate their own learning, and junior students in our hospital were, until recently, taught an interviewing process with a rigid template, predetermined questioning strategies and a primary emphasis on factual biomedical information. Students were preoccupied with 'learning to ask the right questions' and 'staying in control of the interview'. Although still teaching the traditional clinical method, many teachers had discovered its weaknesses through their own experience. In their practice, they followed the maxim that 'if you listen to patients, they will tell you their diagnoses'. They used listening skills backed up by selected closed questions to obtain diagnostic information as they formed and tested diagnostic hypotheses. Perhaps they were aware that they were not 'preaching what they practise' but taught an interrogative interviewing method as a short-term expedient<sup>1</sup>. However, even if traditional clinical method

was seen as a way to support students' learning until they become more sophisticated diagnosticians, it has other weaknesses. Many clinical problems have too strong a psychosocial dimension to fit neatly into it. Even organic diagnoses have an emotional dimension that is highly individual. Patients have perceptions of the nature and origins of their disease that may be very different from those of their doctors. The traditional history template offers no place for those aspects of the patient's experience. Patient-centred communication skills may be taught later in undergraduate or postgraduate programmes but there is a danger that a doctor-centred pattern of interviewing behaviour will be established by then and persist throughout professional life.

A challenge to traditional clinical method comes from recent evidence that the process of clinical communication determines health outcomes independently of the 'technical' processes of diagnosis and treatment<sup>2</sup>. Manchester University has responded to that challenge by increasing the patient-centredness of its educational approach<sup>3</sup>. Having adopted problem-based learning as the main educational method, it was argued that disease-specific diagnostic strategies might be learned through experience, and that training in clinical interviewing should primarily reinforce and develop the existing interpersonal skills of students. They should be taught to put patients 'in control', hear

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their stories, and respond to psychosocial as well as biomedical content. The present study was initiated by a medical student (MU) who wished to evaluate the impact of this curriculum change by measuring separately the process of interviewing and the information-gathering function of the interview. Existing instruments did not draw a clear distinction between those two functions so we developed two scales for the purpose. Our first results led us to modify our teaching and re-evaluate.

## METHODS

### General background

Hope Hospital, where this study was conducted, is one of the three teaching hospitals of the University of Manchester. Together with its linked district general hospitals, it provides teaching for about 30% of Manchester students in the final three years of training. Manchester University had a traditional, discipline-based, curriculum until 1994 when a first intake of students began a horizontally integrated, community-oriented curriculum that uses problem-based learning as its main educational method<sup>4</sup>. Students from St Andrews University join Manchester students for the final three years. Neither course offers training in clinical interviewing in the early years; 'vertical integration' is achieved through the clinical content of the problem-based learning cases. Year 3 begins with an intensive 'basic skills' course.

### Basic skills course

During the academic year 1995–1996, the last cohort of 78 students from the old curriculum entered a 10-week course in Hope Hospital. They were taught the traditional framework of the medical history in a half-day lecture and attended lectures in which they were taught, system-by-system, appropriate questions to elicit and clarify symptomatology. They were attached to medical or surgical 'firms' on which they received instruction from doctors, had access to patients and were taught to present cases. They were offered some limited large-group teaching on the process of communication and small-group learning with 'standardized patients'.

The first students in the new clinical curriculum entered the basic skills course in the academic year 1996–1997. The course was shortened to 4 weeks and, as a result of medical school expansion, the Hope Hospital cohort increased to 94 students. We have described elsewhere our specific teaching approach and how we recruited and trained tutors from the medical and specialist-nursing workforce, and recruited and trained lay people as standardized patients<sup>3</sup>. Briefly, students spent five half days over 4 weeks in groups of 8 developing their interviewing skills through facilitated

group discussion, role-play and standardized-patient interviews with group debriefing<sup>5</sup>. Throughout, they had free access to hospital patients. They were taught to use listening skills to obtain a full description of the patient's problem, to recognize and respond to the emotional component, to explore the patient's personal and social background, and to explore the patient's perceptions and reactions. They were not taught disease-specific questioning strategies. They then entered a problem-based clinical curriculum in which they were encouraged to apply those 'generic' skills to the patients they encountered in their clerkships.

The second cohort of 96 students entered the new curriculum in September 1997. The objectives and basic structure of the course did not change but, in the light of the previous year's experience (see Results), greater emphasis was placed on the medical interview structure. A new interview template was devised to reconcile the structure, function and intended outcomes of the medical interview; the course handbook was revised; a large-group teaching session was added to explain the structure and show how consultation skills are used within it; and group facilitators were asked to place a stronger emphasis on structure and outcomes. A final version of the template now in use is shown in Box 1.

### Video evaluation

Assessment took place 10 weeks after the start of the basic skills course. 37 students, representing half the 1995 intake, and the same number from the 1996 and 1997 clinical intakes were selected (by means of random numbers) and invited to participate. Three experienced standardized patients were recruited and familiarized in a one-hour session with the scenario of a patient with a long history of asthma who had been admitted the previous night with shortness of breath, wheeziness and tightness across her chest. After treatment in hospital, the 'patient' felt much better. She had several stresses in her life, and was worried that her symptoms might be attributable to heart disease since her father had died from a heart attack 10 years before. Students attended five minutes before the interview. They were given written instructions making clear that they were seeing a standardized patient and asking them to take a history in not more than fifteen minutes. The interviews were videorecorded for subsequent rating.

### Rating scales

We developed an 'information gathering scale' (IGS) from an instrument designed by Evans *et al.*<sup>6</sup>. Their scale evaluates the process of interviewing as well as the information obtained. Our scale is concerned only with the latter. It has 12 items—patient details; major symptoms/problems; onset and predisposing factors; main

Box 1 Interview template introduced in the 1997 course

	<b>Objectives</b>	<b>Methods</b>
<b>Building the relationship and hearing the patient's story</b>		
The setting	Make patient feel as much at ease as possible	Ensure that patient is comfortable Interviewer and patient appropriately positioned As quiet and private as possible
Introductions	Introduce yourself Obtain consent for the interview Establish the patient's identity Start to develop a rapport	Appropriate non-verbal and verbal behaviour
Presenting complaint	Establish the reason for the contact Identify the patient's main problem(s)	Open questioning and clarification
History of the presenting complaint	Obtain a detailed, chronological description of the problem(s) Identify the patient's emotions, ideas and expectations about the problem(s)	Student and patient go into problem in depth Active listening skills: Verbal and non-verbal techniques Appropriate use of open, closed and reflective questions Paraphrasing and summarization Acknowledgment and reflection of emotion
<b>Essential background information</b>		
Previous medical history	Obtain a detailed health record: illnesses, operations, etc., relevant to the main problem(s) Other aspects of previous health	Questioning . . .
Family history	Obtain a description of health problems in other family members: relevant to the main problem(s) other problems	and . . .
Drug history	Obtain a record of prescription and over-the-counter medications: Present Important previous Obtain a record of current and previous use of: Tobacco Alcohol Other substances	active . . .
Social history	Obtain occupational or social details relevant to the problem(s) Elicit the patient's personal and social background in general	listening
Systems review	Ask about symptoms which might suggest disease in the main systems	skills
<b>Reaching an agreement and winding up</b>		
Ending	Reach agreement with the patient about the factual content of the history Acknowledge the patient's emotions, ideas and expectations Give the patient a chance to: Add extra information Ask questions Thank the patient Share your conclusions Agree the next step—usually proceeding to physical examination	Explaining Active listening skills Reaching mutual understanding

Table 1 Reliability of communications skills scale (ICC & 95%CI)

Item on rating scale	Inter-rater reliability	Test-retest reliability	
	ICC & 95%CI	For rater 1	For rater 2
Introduction	0.31 (0.00, 0.54)	0.31 (-0.15, 0.65)	0.85 (0.67, 0.94)
Establishing patient's identity	0.88 (0.81, 0.92)	0.76 (0.48, 0.9)	0.80 (0.56, 0.91)
Explaining the purpose of the interview	0.86 (0.79, 0.91)	0.74 (0.44, 0.89)	0.82 (0.60, 0.92)
Exploring the history of the presenting complaint	0.62 (0.38, 0.76)	0.63 (0.27, 0.84)	0.72 (0.42, 0.88)
Exploring 'technical' background information	0.04 (0.00, 0.38)	0.32 (-0.11, 0.66)	0.51 (0.09, 0.77)
Exploring the personal background	0.74 (0.38, 0.87)	0.66 (0.32, 0.85)	0.67 (0.33, 0.86)
Appropriate interview structure	0.67 (0.50, 0.79)	0.42 (-0.03, 0.73)	0.61 (0.26, 0.82)
Introducing new areas of enquiry	0.60 (0.30, 0.76)	0.47 (0.08, 0.75)	0.72 (0.43, 0.88)
Use of open questions	0.49 (0.22, 0.67)	0.47 (0.07, 0.74)	0.47 (0.06, 0.74)
Use of direct questions	0.44 (0.14, 0.63)	0.57 (0.17, 0.80)	0.37 (-0.03, 0.68)
Explaining why information is being sought	0.47 (0.18, 0.66)	0.53 (0.15, 0.78)	0.77 (0.50, 0.90)
Use of non-verbal behaviour	0.61 (0.22, 0.79)	0.60 (0.22, 0.82)	0.07 (-0.40, 0.50)
Use of verbal behaviour	0.51 (0.25, 0.68)	0.32 (-0.12, 0.66)	0.52 (0.11, 0.78)
Pitching language at an appropriate level	0.41 (0.11, 0.62)	0.41 (-0.03, 0.71)	0.04 (-0.43, 0.47)
Checking of patient understanding	0.68 (0.49, 0.79)	0.24 (-0.21, 0.61)	0.00 (-0.43, 0.43)
Use of summarization	0.86 (0.78, 0.91)	0.80 (0.56, 0.92)	0.56 (0.18, 0.80)
Exploring lifestyle/self image changes with the illness	0.58 (0.07, 0.78)	0.59 (0.20, 0.82)	0.45 (0.02, 0.74)
Exploring the patient's perception of the illness	0.59 (0.38, 0.74)	0.78 (0.53, 0.91)	0.77 (0.52, 0.90)
Exploring the patient's emotional reaction	0.43 (0.00, 0.74)	0.51 (0.10, 0.77)	0.90 (0.76, 0.96)
Responding in a sensitive manner	0.55 (0.28, 0.71)	0.36 (-0.05, 0.68)	0.47 (0.03, 0.75)
Allowing opportunity for patient to add information	0.78 (0.67, 0.86)	0.78 (0.46, 0.91)	0.69 (0.37, 0.86)
Allowing opportunity for patient to ask questions	0.92 (0.88, 0.95)	0.87 (0.69, 0.94)	0.88 (0.73, 0.95)
Acknowledgment of the patient's contribution	0.82 (0.68, 0.90)	0.78 (0.51, 0.90)	0.76 (0.49, 0.90)
Total	0.76 (0.28, 0.90)	0.79 (0.51, 0.91)	0.79 (0.53, 0.91)

ICC = Intra-class correlations; CI = Confidence interval

symptoms; related symptoms; previous history, related and unrelated to main problem; impact on patient; patient's interpretation; family health; social circumstances; drug history. A 13th item assesses the student's overall ability to obtain a history. We developed a second scale (the 'communication skills scale', CSS) to measure the quality of interviewing. A development of the Oxbridge Rating Scale<sup>7</sup>, it rated the aspects of interviewing we judged to be important and taught in our course. The CSS contains 23 items covering the following processes: introductions; exploration of the problem and personal background; structuring of the interview; question framing; explanation of why certain information was being sought; use of facilitative behaviour; use of language; summarization; exploration of the impact of the problem on the patient; closure of the interview. Each item on each scale was rated from 1 (poor) to 5 (excellent) and aggregate scores were compiled for all items on the CSS (scale maximum 115) and the first 12 items on the IGS (scale maximum 60). Both scales can be seen at the Salford Undergraduate Education

Web Site (<http://www.hop.man.ac/ume>) or obtained by post from TLD. In the development phase of the study, three of the authors reviewed and rated 10 randomly selected videotapes with both rating scales.

### Rating of the videotapes

The videotapes were analysed by 2 independent observers, MU (then a final year medical student) and a clinician (CR). They compared their ratings of the test set of videos to clarify points of disagreement. Tapes from the 1995 and 1996 cohorts were then presented to the observers for rating in a single mixed batch, so they were unaware to which year individual students belonged. 8 weeks after rating had been completed, 10 randomly selected tapes were re-rated to determine test-retest reliability. The original plan was to complete the study at that stage; however, a slight deterioration was noted in information-gathering (see Results) so the study was extended to the 1997 cohort, with several tapes from the previous two years

Table 2 Reliability of information gathering scale (ICC & 95%CI)

Item on rating scale	Inter-rater reliability	Test-retest reliability	
		For rater 1	For rater 2
Patient details	0.98 (0.97, 0.99)	Complete agreement	0.90 (0.78, 0.96)
Major symptoms/problems	0.66 (0.31, 0.81)	0.70 (0.33, 0.88)	0.66 (0.33, 0.85)
Onset and predisposition	0.59 (0.26, 0.76)	0.70 (0.38, 0.87)	0.60 (0.21, 0.82)
Clarification of symptomatology	0.45 (0.05, 0.67)	0.77 (0.50, 0.90)	0.79 (0.54, 0.91)
Related symptoms	0.78 (0.59, 0.87)	0.85 (0.61, 0.94)	0.70 (0.37, 0.87)
Relevant previous history	0.59 (0.35, 0.74)	0.28 (-0.18, 0.64)	0.53 (0.14, 0.78)
Impact on the patient	0.58 (0.23, 0.76)	0.52 (0.11, 0.78)	0.54 (0.13, 0.79)
Patient's interpretation of events	0.66 (0.49, 0.78)	0.81 (0.59, 0.92)	0.85 (0.67, 0.94)
Other previous history	0.84 (0.73, 0.90)	0.76 (0.48, 0.90)	0.70 (0.39, 0.87)
Family health	0.86 (0.59, 0.93)	0.80 (0.56, 0.92)	0.76 (0.49, 0.90)
Social circumstances	0.78 (0.51, 0.88)	0.74 (0.45, 0.89)	0.77 (0.50, 0.90)
Drug history	0.52 (0.00, 0.80)	0.84 (0.65, 0.93)	0.74 (0.46, 0.89)
Overall impression	0.65 (0.46, 0.77)	0.81 (0.57, 0.92)	0.50 (0.07, 0.77)
Total	0.78 (0.23, 0.91)	0.93 (0.83, 0.97)	0.81 (0.59, 0.92)

to check that there was no 'drift' in the rating. A second randomly selected set of 10 videos was re-rated at the end of the study to reassess test-retest reliability.

**Statistical methods**

Inter-rater reliability and test-retest reliability on two sets of 10 videos rated 8 weeks apart were assessed by calculation of intra-class correlations (ICCs) for each rating scale as described by Fleiss and Cohen<sup>8</sup>. For the assessment of inter-rater reliability, the ICC has been presented as a mean of raters' value because the comparison between years was based on the mean of the two raters' results. After an initial prestudy evaluation of the reliability of the scales with a set of 10 test videos, the final inter-rater reliability analyses included data from all students. The ICCs were interpreted as kappa coefficients so that an ICC > 0.6 was taken to signify good agreement, and > 0.8 to signify excellent agreement<sup>8,9</sup>. Mean bias between raters and 95% limits of agreement were assessed for means of difference plots<sup>10</sup>. Overall scores for the three cohorts on the CSS and IGS were compared by independent *t*-tests. Discriminant analysis was employed to highlight any differences between items on the rating scales for the 3 years.

**RESULTS**

ICCs for inter-rater reliability were 0.90 for the total score on the CSS and 0.88 for the IGS, respectively, with ICCs for individual items mostly > 0.6. The scales were judged reliable enough to proceed to the main study. Of the 37 students in each cohort invited to participate, 33 (89%)

1995 students, 29 (78%) 1996 students and 24 (65%) 1997 students consented. One video in the 1997 group could not be rated owing to poor sound quality, leaving 85 videos in total for analysis.

**Performance of the CSS**

Table 1 shows the ICCs and 95% confidence interval (CI) for inter-rater reliability and test-retest reliability for each rater. Results are shown for each item and for the scale total. The inter-rater ICC for the scale total was 0.76 (0.28, 0.90) while individual items ranged from 0.04 to 0.92. Mean bias was 5.9 (5.2% of the scale maximum), 95% limits of agreement -8.1, 20.0 (-7.0%, 17%). Test-retest reliability ICC for the total score was high for both raters (ICCs 0.79; 0.51-0.91 and 0.79; 0.53-0.91) while ICCs for test-retest reliability for individual items ranged from 0.0 to 0.90.

**Performance of the IGS**

Table 2 shows data in the same format as Table 1. The inter-rater ICC for the scale total was 0.78 (0.23, 0.91) while individual items ranged from 0.45 to 0.98. Mean bias between the two observers was 3.6 (6.0% of the scale maximum), 95% limits of agreement -4.3, 11.6 (-7.2%, 19.3%). Test-retest reliability ICC for the total score was again high for both raters (ICCs 0.93 [0.83-0.97] and 0.81 [0.59-0.92]) while ICCs for test-retest reliability for the individual items ranged from 0.28 to complete agreement.

### Comparison of student performance: CSS

There were no significant differences in the CSS total score between the three years (1995 cohort, 62.5 SD 9.3; 1996 cohort, 61.5 SD 9.8; 1997 cohort, 62.2 SD 7.8). Discriminant analysis showed that students had lower scores on explaining the purpose of the interview in 1995, on exploring the history of the presenting complaint in 1996, and on the use of facilitative non-verbal behaviour in 1997. Otherwise, individual item scores were similar in the different cohorts.

### Comparison of student performance: IGS

The IGS mean score was slightly lower in 1996 (33.5 SD 5.5) than 1995 (38.5 SD 5.1, difference 95 vs 96:  $-5.0$ , 95% CI  $-7.7$  to  $2.3$ ,  $P < 0.001$ ) but increased back to the original level in 1997 (38.4 SD 4.6, difference 95 vs 97:  $-0.1$ , 95% CI  $-2.8$  to  $2.5$ ,  $P = 0.9$ ). Performance in the 1996 cohort was lower for most items—particularly related symptoms and the patient's interpretation.

## DISCUSSION

Patient-centredness has been described as a model of medicine that includes the conventional biomedical approach but that also goes beyond it to include consideration of the patient as a person<sup>11</sup>. The rationale for this approach is that effective medical practice is a balance between diagnosing and treating disease ('the broken part') and identifying the unique experience of illness in the terms of the person who experiences it. Doctor-patient communication, the process through which that balance is explored, is an independent determinant of health outcomes<sup>2,12</sup>. Good communication, with an emphasis on listening skills, is an efficient and effective way of obtaining pertinent information<sup>6</sup>. The medical interview can no longer be viewed purely as a questioning exercise controlled by the interviewer to find facts and feed into the diagnostic process, and yet medical interviewing is often presented to learners in that way. Previous studies have shown that medical teaching does not provide adequate skills in interpersonal communication<sup>13</sup>, presumably because no attempt is made to help learners reconcile the doctor-centred biomedical and the patient-centred psychosocial aspects of interviewing. The two approaches are often taught by different teachers in different settings and at different stages of training; under examination pressures, it is unsurprising that the biomedical agenda ultimately has the upper hand. The educational approach in the present study sought to strike a more patient-centred balance whilst retaining precision in diagnostic information. No changes could be identified in communication skills but information-gathering deteriorated in the first year, leading us to question whether the intervention was ill-advised in terms

of diagnostic precision. However, further modification of the course restored information-gathering to its previous levels.

The conclusions of the study are predicated on the performance of the scales. Both were reasonably reliable between and within raters, and there was remarkable consistency in the profile of item scores in the different year groups (data not shown). The IGS showed sensitivity to change. There were some minor changes in individual items of the CSS from year to year but there was insufficient overall change to judge whether or not that scale was also sensitive. The proportion of students who agreed to participate fell slightly year by year, probably because the student who set up the study was less available to recruit as he progressed through training. Could that have influenced the results? Higher-ability students would be more likely to volunteer than their lower-ability classmates. That would tend to favour improvement rather than the deterioration that we observed between 1995 and 1996. Even if recruitment bias were the explanation for the difference between the first and second year groups, it could not explain the reverse change between the second and third year groups when recruitment fell further. We conclude that the difference in information-gathering was unlikely to be an effect of differential recruitment.

The deterioration in information-gathering in the second year group was subjectively apparent to the raters when they viewed the tapes. Although they did not know to which year group individual students belonged, it was clear that some students took medical histories with reasonable confidence following a predetermined questioning template. Others lacked confidence, floundered in their interviewing and lacked good communication skills. When the results were analysed, it was apparent that the second year group was overall less confident and competent in history-taking. Probably this was a direct effect of the change in teaching approach, although it is possible that curriculum change itself had caused this loss of confidence by unsettling staff and students. Rather than abandoning patient-centred interviewing, a decision was made to work harder at building student confidence in the patient-centred approach. To achieve that confidence, we tried to help students understand and master the structure of the interview as a framework within which to practise listening skills. The original plan was to finish the study after the second year but another group was recruited and videorecorded. Their information-gathering skills showed a significant improvement back to baseline levels although the impossibility of blinding the raters to the year group is a possible cause of bias. Resource constraints have prevented us from evaluating a fourth cohort but the template has been developed further and our subjective impression is that

this has done more to reconcile the patient-centred method with traditional history-taking, still expected by most teachers. Many students in our most recent cohort are displaying good skills at obtaining detailed biomedical and psychosocial descriptions of their patients' problems.

Some might conclude that our labour-intensive approach has performed no better than a more traditional didactic course in which students learn an interviewer-centred method with a strong biomedical bias; however, the overall value of our programme cannot be judged after just 10 weeks of training. We have anecdotal experience that some students build on this early exposure in their clinical attachments and through further training in communication skills. At the least, this study shows that the emphasis can be shifted towards the patient-centred method without impairing the information-gathering skills of the students 10 weeks into their course.

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