Benefits of knowledge-based interprofessional communication skills training in medical undergraduate education

Simon Buczacki[1] • Joseph Shalhoub[2] • Peter M George[2] •
Laura M Vearncombe[3] • Patrick D Byrne[4] • William Alazawi[5]

[1]University of Cambridge, Cambridge, UK
[2]Imperial College London, UK
[3]University of London, UK
[4]NHS Highlands, Belford, UK
[5]Centre for Digestive Diseases, Queen Mary, University of London, E1 2AT, UK
Correspondence to: William Alazawi. Email: w.alazawi@qmul.ac.uk

Summary

Objectives Good interprofessional communication is fundamental to effective teamworking in medicine. Finalmed is a private course that teaches the principles and methods of clinical presenting as an iterative technique of reasoning though clinical data. We have tested the efficacy of this technique using a questionnaire-based study.

Design An anonymized 10-point Likert scale questionnaire was designed.

Setting Questionnaires were distributed at five UK courses and two UAE courses.

Participants Questionnaires were given to all students attending these courses.

Main outcome measures The questionnaire included pre- and post-course questions addressing self-reported confidence in clinical presenting (CCP) and effectiveness in clinical presenting (ECP). We also asked whether attendees felt that clinical presenting should be integrated formally into medical school curricula.

Results A total of 331/395 questionnaires were returned. Median improvement in CCP was 50% ($P < 0.0001$) and in ECP was 40% ($P < 0.0001$), irrespective of country of study, graduate entry status and whether the student felt that they had been exposed to these techniques previously. Students recorded a strong opinion in favour of integrating the content and style of the Finalmed course into their medical school curriculum, with 286 students (86%) recording a score of ≥8.

Conclusion Our study suggests that after a two- or three-day dedicated course, both self-reported confidence and effectiveness in clinical presenting significantly improve. Furthermore, students in the UK and the

UAE returned a desire for integration into medical school curricula of IPC through the teaching of clinical presenting.

Introduction

Medical education has changed markedly over the past two decades. The exposure to clinical medicine and surgery from the first term at medical school, the decrease in basic science content and the integration of communication skills into the teaching of medicine is evident in most UK MBBS courses.[1] The clinical encounter is still a major component of assessment throughout careers in medicine, and particularly in finals examinations. Whether the medical school employs Objective Structured Clinical Examinations (OSCEs), Practical Assessment of Clinical Examination Skills (PACES), or long and short cases, the student will undergo an observed patient encounter – either taking a history, examining a patient, or both. There will then be a period in which the student is expected to present their findings prior to a discussion surrounding them. This remains a robust assessment style and the skills tested in such examinations are key to good clinical practice in the future.[2–5]

The ability to present cases in a succinct yet comprehensive manner demonstrates understanding of the symptoms and/or signs and of the key facts that influence the patient's care. This capacity to present depends in turn upon clinical reasoning skills that are required to obtain, process and organize large volumes of patient information.[6] This skill-set is the same as those used by practising doctors who can work effectively in modern, large and changing teams. These are the doctors who distil information rapidly, make good referrals, write logically in the notes and can handover safely and comprehensively. These attributes are the manifestations of good interprofessional communication (IPC) skills.[7]

Communicating well with one's professional colleagues calls upon a different set of communication skills from those frequently taught in medical school curricula, which tend to concentrate (appropriately) on the ability to communicate effectively with patients. IPC has always been difficult to teach.[6] While most experienced doctors inherently understand the components of an effective presentation, this is rarely well-articulated to

students and junior doctors.[8] The instruction to 'only present the relevant positives and negatives' is less helpful if the learner does not have the skill set to determine relevance for themselves.[8] Such skills cannot be learned from texts nor from didactic lecturing, learners must first understand the logic behind the clinical diagnostic and investigative process. In fact, there are very few opportunities for students to learn and practice these skills or to receive feedback so that they improve. The increased classroom demands on students' time and the pressures on junior doctors from such competing factors as shift-working and the breakdown of the medical firm, the European Working Time Directive and hospital targets are all likely to have contributed to diminished apprentice-like contact between junior hospital staff and medical students. Put simply, medical students no longer have the opportunities to learn to speak the language of medicine as they might have done a decade ago.[9,10]

We hypothesize that these skills can be taught if grouped together under the umbrella term of 'clinical presenting' – more than the ability to speak well, rather the ability to synthesize the content of the presentation so that it is concise, relevant to the patient concerned and has the management of the patient at its heart. Finalmed Clinical Presenting is a private training course designed primarily for final year medical students and claims to teach these skills. The course runs across the UK and in the United Arab Emirates (UAE) and teaches students the essentials of medicine, surgery and emergency care for finals aimed primarily at the clinical encounter.[11]

The Finalmed courses begin with mornings of lectures that review the medicine and surgery that is frequently encountered in clinical practice. Students are taught to begin to consider their patient's diagnosis from the start of the clinical encounter rather than wait until the end of the examination or history-taking before they 'gather their thoughts'. Students are encouraged to group signs and symptoms into 'cassettes' that indicate a particular pathological process and which signs are better predictors of pathology than others. Therefore, students learn to assess

the likelihood of a diagnosis based on conditional probability (Bayes theorem) given the presence or absence of a sign or 'cassette' of signs. Students learn to quickly iterate through this process after eliciting each piece of clinical information. Thus, a likely diagnosis can be deduced from a broad initial working diagnosis (the hypothesis) based on a sound understanding of the signs.[11–14] Furthermore, the aims of the examination are broadened beyond simply reaching a diagnosis; rather students learn to seek signs and symptoms of the causes and complications of the conditions that they diagnose. Students are also taught how to apply these skills to presenting histories, radiographs, answering examiners' questions and communications skills stations. Furthermore, they are shown how their choice of descriptive term itself has diagnostic implications and learn structured approaches to use this to their advantage.

In the afternoon, students split into small groups (5–8 students per group) to practise the skills. This interactive session is led by a qualified doctor who will have undergone a training programme to ensure consistency of teaching across the groups. The students are shown pictorial or diagrammatic representations of clinical cases and asked to present the case. They are then asked management questions relevant to the differential diagnosis in an exam style as if they had just elicited the clinical information themselves. The tutor will then use a combination of instruction and facilitation to feedback to the student. Students continue to present until they improve and are confident in their ability, learning from their own as well as their peers' experiences prior to moving on to a different set of cases with another tutor. In total each student presents individually 10–12 times over the period of the course, although will experience approximately 100 peer presentations in total, in their small groups including feedback and discussion.

To test the hypothesis stated above, we assessed the impact of this course on self–reported confidence and effectiveness in clinical presenting. We devised a questionnaire that allowed us to record the impact of this course on confidence in, and effectiveness of, their clinical presenting (both self-assessed), how widespread such skills were being taught and the desire among students to integrate such teaching into medical school curricula.[15]

Here we report the results of this study and discuss the merits of integrating the style and content of the Finalmed course into standard medical school courses.

Methods

The questionnaire

An anonymized questionnaire was developed to assess the impact of the Finalmed course on confidence in clinical presenting (CCP) and effectiveness at clinical presenting (ECP). The questionnaire was handed out to the students on arrival at the course although neither the aims nor hypotheses of the study were discussed. It comprised seven questions (Table 1), three of which were completed before any course content had been delivered (pre-course) and four at the end of the course (post-course). All questions, with the exception of the final question, were based upon a 10-point Likert scale.[15–17]

Study population

The population was self-selected by non-competitive application to a two-day (UK) or three-day (UAE) Finalmed clinical presenting courses. The study was performed during five UK-based courses and two courses in the UAE.

The questionnaire was administered to all attendees of the courses. Those attending were predominantly final year medical students and all had had at least 18 months of clinical medicine teaching and experience. All had already completed a third year OSCE or equivalent clinical examination.

Analysis

Data from all returned questionnaires were entered into a database. Individual improvement scores for CCP and ECP were calculated as pre-course score/post-course score.

Statistical analysis was undertaken using Prism 5.01 (GraphPad Software, San Diego, California, USA). Normality was tested for using the D'Agostino and Pearson test and normally distributed data were summarized as means and compared parametrically. Where data were not normally distributed, they were summarized as medians and

Table 1
Pre- and post-course questions

Pre-course questions	Post-course questions
How confident do you feel when asked to present a clinical case?	How confident do you feel when asked to present a clinical case?
How effective are your clinical presentation skills?	How effective are your clinical presentation skills?
I am a confident person	How strongly do you feel that the content and style of this course should be formally integrated into you medical school curriculum?
	Have you been taught the skills we've demonstrated on this course at your medical school or anywhere else? (Y/N) If yes, where?

non-parametric tests were used. Results were considered significant if $P < 0.05$.

Results

Study population

Of the 395 questionnaires handed out to course candidates in the UK and the UAE, 331 were returned. This equates to a response rate of 83.7%.

The median age of the students was 24 years (range 20–44), 65% ($n = 214$) were women, 32% ($n = 113$) were graduate entry medical students, and 18% ($n = 61$) were from the UAE.

Pre-course scores

In order to assess whether differences in baseline confidence would confound downstream analyses we correlated this score with age (Spearman correlation), and compared it between countries of study, graduate entry status, and self-reported previous exposure to teaching on clinical presenting (t-test) (Table 2). With the exception of male students having a higher mean baseline personal confidence score than their female counterparts (6.63

versus 5.66; $P < 0.0001$), there were no differences in baseline personal confidence.

The mean pre-course self-reported CCP score was 5.01/10 (range 1–9) and the mean self-reported score for ECP was 4.99/10 (range 1–9). Both baseline CCP and ECP scores were higher among students from the UAE (Table 2). Mean pre-course ECP score was higher in non-graduate entry students (age had no effect here; Table 2). Graduate entry status did not significantly appear to impact on baseline CCP score. Previous exposure to teaching on clinical presenting skills did not appear to affect the pre-course CCP or ECP scores.

Improvement in CCP and ECP scores (Figure 1)

The median pre-course CCP score was 5/10 and the median post-course CCP score was 7/10. The median pre-course ECP score was 5/10 and the median post-course ECP score was 7/10. Improvement scores for each respondent were calculated and the median improvement in CCP was 50% and in ECP was 40% (both $P < 0.0001$, Wilcoxon signed rank test). Both CCP and ECP scores increased by 50% in female students versus 40% in male students (CCP $P = 0.0322$; ECP $P = 0.0137$). However country of study, graduate entry status or previous exposure to the skills demonstrated had no effect on these scores (Table 3).

Previous teaching in clinical presenting

Only 79 (23.9%) of the respondents reported that they had previously been taught the skills demonstrated on the Finalmed course; by another doctor ($n = 48$, 14%), at medical school ($n = 27$, 8%), from books ($n = 11$, 3%), on another course ($n = 5$, 2%), and by other means ($n = 1$, 0.3%). Interestingly, 13 (4%) had been taught by previous attendees of Finalmed courses. Having had previous exposure to the skills taught was more common among graduate entry compared to non-graduate entry medical students ($P = 0.0091$). However there was no significant difference in previous exposure to these skills in terms of country of study or gender (Table 3).

There was a wide variation in the number of students from each university who reported having been taught the skills demonstrated on the

Table 2

Baseline scores for personal confidence, confidence in clinical presenting (CCP) and effectiveness of clinical presenting (ECP) stratified according to study group characteristics

	Mean personal confidence score	*Mean pre-course CCP score*	*Mean pre-course ECP score*
Gender			
Male	6.63 ($P < 0.0001$)	5.18	4.90
Female	5.66	4.93	5.17
Country of study			
UK	5.98	4.90	4.84
UAE	5.98	5.47 ($P = 0.0022$)	5.64 ($P < 0.0001$)
Student entry status			
Undergraduate	5.96	5.07	5.08 ($P = 0.0063$)
Graduate	6.05	4.69	4.54
Previous teaching of skills demonstrated			
Yes	6.15	5.23	5.17
No	5.92	4.94	4.93

Finalmed course at their medical school. Eleven out of 55 (20%) students from Nottingham reported that they had been taught such skills at medical school, 3/25 (12%) from Imperial College London, 3/44 (6.8%) from Barts & The London, and 1/43 (2.3%) from Kings College, London.

However, there were no significant differences in the median improvement scores in both CCP and ECP in this group who felt they had previously been taught the skills compared to students who had not, regardless of university attended. This was despite there being no significant difference in baseline personal confidence, CCP or ECP.

Integration of clinical presenting into medical curricula

Students recorded a strong opinion in favour of integration of the content and style of the

Figure 1

The median (± interquartile range) self-reported improvements in confidence in clinical presenting (a. 32% improvement; $P < 0.0001$) and effectiveness at clinical presenting (b. 32% improvement; $P < 0.0001$) of the Finalmed course
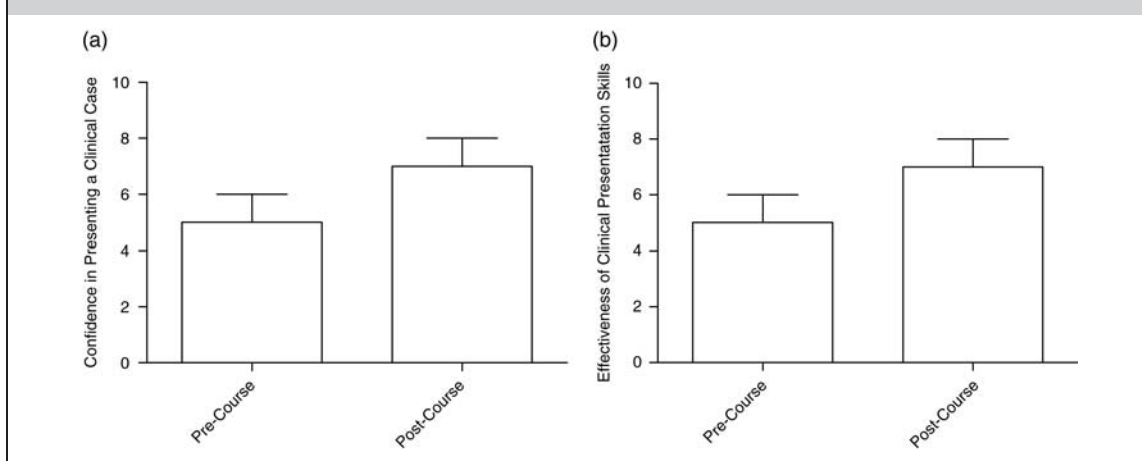
Table 3

Summary of post-course results stratified according to study group characteristics. Summarized are: fold improvements in confidence in clinical presenting (CCP) and effectiveness of clinical presenting (ECP) scores; desire to integrate Finalmed-style teaching into medical curricula; and the proportions of students who felt they had been taught the skills demonstrated on the course elsewhere. N/A = not applicable

	Median improvement in CCP score (fold change)	Median improvement in ECP score (fold change)	Integration score	Previous teaching of skills (%)
Gender				
Male	1.4	1.4	8.0	30.0
Female	1.5 ($P = 0.0322$)	1.5 ($P = 0.0137$)	10.0 ($P = 0.0012$)	21.0
Country of study				
UK	1.5	1.4	9.0	25.2
UAE	1.5	1.4	10.0 ($P < 0.0001$)	18.0
Student entry status				
Undergraduate	1.4	1.4	10.0 ($P < 0.0001$)	21.0
Graduate	1.5	1.5	7.0	38.2 ($P = 0.0091$)
Previous teaching of skills demonstrated				
Yes	1.4	1.5	8.0	N/A
No	1.5	1.4	9.0 ($P = 0.0348$)	N/A

Finalmed course into medical school curricula. Eighty-six percent ($n = 286$) of students recorded 8, 9 or 10 (median score 9; range 4–10) (Figure 2). This opinion was significantly stronger among the UAE students ($P < 0.0001$), female students ($P = 0.0012$), non-graduate entry medical students ($P < 0.0001$), and those who had not been previously taught these skills ($P = 0.0348$) (Table 3).

Discussion

Effective communication is central to good clinical practice.[18] While communication skills have taken over a significant proportion of medical school curricula, the skills needed to communicate large volumes of clinical information between colleagues concisely yet comprehensively have received scant attention. Indeed we found very little literature addressing the benefits of training in clinical presenting for medical students despite it being an integral part of how they are examined as well as a marker of a 'good' doctor.[6] Challenges faced in the teaching of clinical presenting have been recognized for some time. Consequently, in 1971 it was even considered that oral presentation of clinical cases should be dispensed with.[19] We conducted our study to establish whether teaching a structured approach to clinical presenting provided benefit to senior medical students. Our study clearly demonstrates that after a 2–3 day course there is a significant improvement in students' confidence and self-reported effectiveness in clinical presenting (Figure 1). While, as with all medical training, continued exposure to these concepts and clinical experience are essential for sustained improvement, we have demonstrated that these principles and techniques can be taught effectively in a short course.

Of particular interest are the low pre-course confidence in clinical presenting (CCP) and effectiveness of clinical presenting (ECP) scores in the UK, especially in light of the seniority of the students attending. Students who felt they had been taught similar skills before were no more confident or effective pre-course and gained as much benefit from the course as students who had not been taught similar skills (Table 3).

This finding can be explained in a number of ways. It may be that the benefit from teaching clinical presenting in any format is only short-lived, irrespective of quality and quantity of the teaching itself. However, it is unlikely that the attainment of clinical presenting skills is different from that of any other clinical skill where concentrated teaching over a period of days leads to a sustained and reproducible knowledge

Figure 2

A histogram illustrating individual student's desire for integration of the content and style of the Finalmed course into medical school curricula
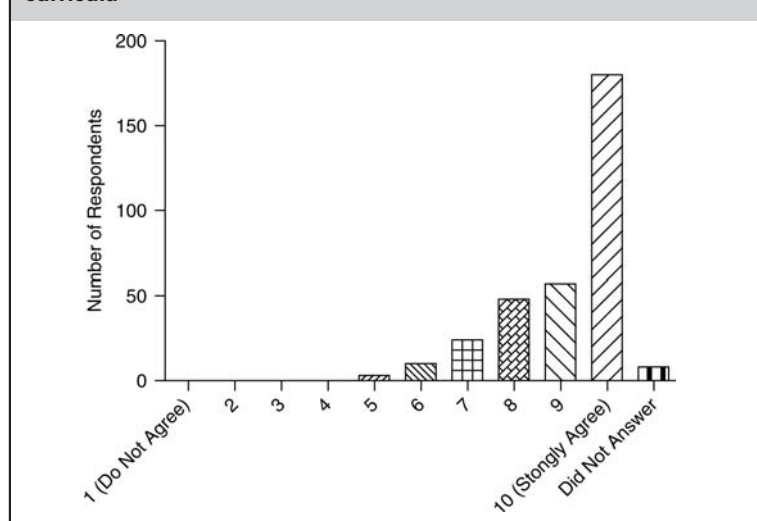
acquisition.[6] Extending the study into a follow-up period and comparing the results from course attendees to those from a control group of medical students at the same stage in their career may contribute to our understanding here. Another explanation for the apparent lack of effect of reported previous teaching on CCP and ECP improvement scores could include that the teaching had been in some way limited or even deficient. A further alternative is that while the students thought they had been taught how to present, in fact they had not been given the tools with which to approach *any* clinical scenario.

Our data raise the question why clinical presenting skills in particular and IPC as a concept are not prominent in medical school curricula. Medical schools have come under significant pressure to deliver curricula that conform to a variety of stakeholders' interests leading to tighter clinical course timetables. However the authors believe that, like in other professions[20,21] a greater emphasis should be placed on IPC and its manifestation as clinical presenting.

The results of this study also show that there is a desire from medical students to have formal training in clinical presenting techniques integrated into their medical curricula. However, we believe that one of the key benefits of teaching

in an environment such as the Finalmed course is the very fact that it is not a formal part of a medical school course. Students learn in a non-confrontational, consequence-free environment alongside peers from other institutions all of whom are motivated to learn. This has been proposed by other authors as a superior environment for this form of education.[22] As such it is questionable whether simply adding lectures in clinical presenting to an already busy curriculum would be of any benefit to students. Time and resource would have to be invested into the small-group teaching, prompt feedback, and facilitation. In recent years medical schools have trimmed back clinical science teaching. As a result we believe that students rote-learn clinical medicine rather than develop an understanding of the pathophysiological significance of symptoms and signs.

Some of our findings were in keeping with previously published data on predictors of baseline confidence.[23] We found men to have higher levels of baseline personal confidence than women. In addition we found that women, nongraduate entry students and students who had not been taught the skills before recorded higher scores in favour of integrating the content and style of the Finalmed course into medical school curricula. We also found that graduates were more likely to have reported being taught the skills before, which may be a reflection of IPC training or practice prior to medicine.

We acknowledge that there are some deficiencies in a questionnaire-based study to objectively assess the course, notwithstanding our high response rate. However we feel that self-reported grading by our students is an appropriate measure of how well the Finalmed course improves students' clinical presenting skills. It would be difficult to grade students' presentation for the purposes of comparison, not least because it would negatively influence the dynamic of the course. Moreover, we believe that the contemporaneous personalized feedback the students receive leaves them well-placed to assess how effective their own presentation is, in comparison to how they were at the start of the course. An alternative form of objective assessment might be to compare students' finals exam results; however these would be difficult to obtain and examinations are not comparable across universities. There may also be a selection bias in that inherently more driven and/or brighter students

seek out the Finalmed course compared to a control group. Ultimately, however, we have demonstrated that the Finalmed course is a valuable vehicle through which students can be introduced to the methods of learning IPC skills.

The Finalmed course was designed with these aims in mind and the complementary content of the lectures and the small group sessions, together with the intensive tutor-training to eliminate conflicting teaching form a large part of the course's success. Furthermore, as has been widely demonstrated, good feedback is a fundamental part of effective learning.[24–27] The small group tutors are trained to use the right combination of instruction, facilitation and feedback to ensure maximal benefit for the students. These factors are likely to contribute to the high improvement scores in CCP and ECP.

The quality of doctor–patient communication will always remain an important yard stick by which doctors are assessed by the general population and this should remain central in the training of medical students. Despite the acknowledged limitations, this study adds significantly to an area of medical education that appears to have been overlooked and yet is enormously important if we are to train medical students to the highest standards.

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