Foundation doctor-led clinical teaching: A new innovation in the undergraduate curriculum

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Abstract

Introduction: Since its introduction in 1988 by Whitman the concept of the near-peer teacher has gained a lot of popularity amongst educationalists across the globe. Teaching imparted by near-peers has been proven to be effective and has been rated by some students to be comparable to consultant-led teaching. We introduced such a programme in April 2012 at Lincoln County Hospital in the United Kingdom. The programme was organized by Foundation doctors for third year University of Nottingham medical students.

Objective: To ascertain the value attached to this new teaching intervention by the medical students.

Method: The students were asked to complete a structured questionnaire at the start, mid-way and end of the teaching programme to self-assess their clinical skills and to assess the teaching programme.

Result: There was a subjective increase in student confidence in their own skills at history-taking, clinical examination and diagnostic ability over the duration of the course. Further, they felt that the foundation doctor-led teaching was a useful adjunct to the already existing teaching programme and should continue beyond this pilot year.

Conclusion: The newly introduced foundation doctor led teaching programme was welcomed by students and hopefully should continue to evolve over the coming years to make it even better. Such courses should be encouraged as they improve learning opportunities for the students and provide junior doctors an invaluable teaching experience which is useful for their portfolios.

Key words: Undergraduate, medical students, near-peer teaching.

Background

Each year, third year (clinical phase 1) medical students from the University of Nottingham have their clinical placements in various hospitals in the region. The Lincoln County Hospital, the largest district hospital in Lincolnshire is one of them. Each year, 16 students in total have a 14-

week attachment, 7 weeks in Medicine and Surgery each, at Lincoln. This is followed by all Nottingham students having a written clinical paper and a 40-minute practical exam assessing history taking and examination skills. Passing both components of the exam is essential to progress into the fourth year at Nottingham.

As part of on-going attempts to improve the students teaching experience, we at Lincoln decided to set up a special teaching programme for these students. This programme was to be delivered by the Foundation year 1 (FY1) doctors at Lincoln. This course was designed to address the fact that the clinical phase 1 (CP1) students had limited exposure to patients with real pathology and the 'art' of examining them as well as taking a history from them. It was hypothesized that students would feel a lack of competency in these skills and that the course would be a useful adjunct to both prepare for the exams and to give confidence in the above skills.

Another driving force behind this course was the success of the already existing FOOT (Finals Orientated OSCE Training) programme, targeting University of Nottingham students in their final year, taught in a similar manner by FY1 teachers. Further, it was felt that this would give the FY1 doctors a good teaching experience whilst also offering a previously unavailable opportunity to the students.

Literature Review

The Latin word 'doctor' means 'teacher'. Teaching and training of doctors and medical students is given a lot of importance by the General Medical Council (GMC). In this connection, the GMC has made special reference to this in its document 'Tomorrows doctors 2009'. In the UK, Foundation Year 1 (FY1) doctors as part of their training have to show proof of their involvement in teaching in order to get signed off on completing the year and becoming fully registered with the GMC. In addition, medical students often lack opportunities to gain bedside teaching experience and find instruction in history taking and examination useful.[1]

We describe the development of a 'near-peer' teaching programme for third year medical students starting their first clinical attachment. The programme was aimed at covering systems based examination and history taking skills in order to help acclimatise to both the ward environment and the end of year practical exam. Unlike many prior courses it was designed and delivered by FY1 doctors.

The concept of the 'near-peer' teacher was introduced by Whitman in 1988.[2] It describes teaching by a teacher who is only a few years senior to the student. Factors such as, an increase in the number of medical students, constraints on a clinician's time to teach and shortage of trained teaching faculty encourages near-peer teaching.[3,]

Our teaching programme followed the principle of 'cognitive congruence', that a teacher with a similar level of knowledge to that of the student will be a more effective teacher than one who is cognitively incongruent; an expert with a dissimilar knowledge base.[4,5] This theory suggests merits of near peer teaching in its own right.

Bulte C *et al*, 2007 reported how students may find near peer teachers more approachable for discussing conceptual problems.[6] This along with their clinical experience and recent exam knowledge gives near peer teachers informed insight[3] as well as being seen as less threatening to students.[5] As the educational environment or learning climate is important for optimising learning.[7] This makes a positive learning environment where students may make mistakes and be corrected without pressure.[8] In previous studies ~25% of students prefer teaching from near-peer to faculty. Students closest to graduation have expressed the belief that the ability to teach is an appropriate objective of a graduating medical student.[8]

Near-peer teaching is a popular adjunct to core teaching and can be easily established in all hospitals involved with teaching undergraduates.[2] In a similar teaching program, 73.2% of students felt the teaching was comparable to consultant-led teaching and 97.9% felt it had a positive impact on their learning.[7] Students have found near-peer teaching in multiple specialties useful e.g. cardiology examination[8] and in musculo-skeletal examination.[9,10] In addition, students were found to perform as well in clinical skills examination as those formally taught by professionals.[11,12,13] Finally, some workers have reported finding no evidence that near-peer teaching compromises teaching of students.[14]

Course format

The course commenced two weeks into the CP1 programme and continued as weekly two hour lectures. The first half of the course covered system by system examination skills, the second half focused on history taking and the system specific questions necessary to make a diagnosis for example distinguishing cardiac chest pain from pulmonary in a limited period (Appendix 1). In order to maintain a good standard of teaching, all students and teachers were provided with a checklist detailing how examination skills would be assessed in the final exam as well as a syllabus of conditions to cover in the history taking sessions. As the students lived on site during the week these lectures were fitted into their usual prescribed timetable, for two hours in an evening.

As liaising with the local medical school teaching staff is critical to ensure appropriate and relevant teaching as well as standardization of the learning outcomes (Rodrigues J et al, 2009) discussion took place with faculty members before the course to ensure its relevance. Sessions were left blank in the last three weeks to allow for 'revision' lectures in Medicine and Surgery at the students' discretion as well as 'mock' practical exam to allow them to practice their skills in the 40 minutes that they were allotted.

Aims & Objectives

As this was a new teaching intervention, we were not sure as to how well it would be received by the students and that would it have any benefit for the students or not.

Hence, keeping the above in mind, this study was set up to ascertain how the CP1 students perceived this new FY1 led teaching programme. Further, their responses could be used as a guide to see whether the programme should continue in subsequent years or not.

Methods

Feedback from the students took place by direct questionnaires at the start of the programme, halfway through it and at the end. The questionnaires focused on ascertaining how the CP1 students self-rated their skills across various domains at that point (Table 1). In addition, they were asked whether they felt the course was useful or not.

After the 'mock' practical exam individual feedback from the examiner and simulated patient was emailed to each student, detailing areas of success and areas to work on to help shape their revision before the real exam. Students who attended the mock practical were asked if the course should continue beyond this pilot year as well as ranking their confidence before and after the course out of ten as a way of assessing perceived improvement.

The responses were added to an excel database & then analyzed.

Recruitment

A presentation was made during the student's induction proposing and outlining the course. Participation was strictly non-mandatory; students could attend as many or as little of the sessions as they saw fit for their own needs. FY1 teachers were recruited again on a voluntary basis. Apart from being FY1 doctors there were no other pre-requisites for taking part other than a desire and commitment to take part in return for teaching experience for their portfolio. For each session one FY1 was chosen as the 'lead' teacher who would prepare a PowerPoint lecture with other FY1s who would assist with group work to practice skills after the lecture.

Results

The proportion of questionnaires completed was as follows:

- Pre-course 16/16 (100%)
- Mid-course 9/16 (56%)
- Post-course 9/16 (56%)

Examination & history taking (Table 1): At the start of the course only 3 of the 16 students felt confident in examination, the same number felt confident in taking a history. By the halfway and end questionnaires all of the 9 students sampled felt confident in examining. 8 of the 9 felt confident in taking a history at the halfway questioning and all 9 were confident in history taking at the end session.

Diagnosis (Table 1): None of the students initially felt that they had good practice in making a diagnosis by using examining and history taking. At the halfway session 3 of the 9 students questioned felt confident in making a diagnosis, at the end 4 of the 9 students were confident in the skill.

All the students agreed that they had found this course of teaching very useful (Table 2).

At the end of the course all the students were in agreement that the course should continue in subsequent years (Table 3).

The greatest pre-course confidence was in the abdominal examination. The lowest was in the head and neck examination. The greatest increase in student confidence was seen in gastroenterology/surgical history taking while the lowest was in the head and neck examination again (Table 4). On the whole, across all domains the students expressed an increase in confidence by the end of the course (Table 4).

Discussion

However, the feedback from the students shows an obvious appreciation of the programme. Clear improvements were seen in all of the areas covered by the course. Before the course the students were most confident in the cardiovascular, respiratory and abdominal examinations; probably due to familiarity with these skills. The fact that the head and neck examination was the area of lowest confidence shows that in the pre-clinical setting there isn't always an opportunity to acquire necessary experience in all areas of examination. That it was also the area of lowest perceived improvement could be due to a lack of opportunity in the clinical course to see patients with head and neck signs. It could however, also be due to students avoiding areas where they are uncomfortable.

As recommended by Rodrigues J *et al*, this course had heavy faculty involvement from the outset to ensure relevance.[3] During this pilot year, there was a degree of informal feedback during the course but in future there could be a more formal reporting to the faculty of student questionnaire results. In particular, the results showing student's confidence in the areas of the course. For instance, if students consistently found certain areas such as head and neck examination difficult then by a more formal reporting this could help improve the faculty led teaching and thus establish a greater connection between the faculty led and the FY1 led programme.

To avoid any additional strain on the students, there was no element of assessment during the course other than the mock practical exam. Therefore all improvement measured was subjectively perceived by the students themselves. The absence of any objective data in our opinion was not necessary as the remit of establishing a programme where students can gain confidence in the examination and history taking skills was met. It also encourages an element of reflection and taking responsibility for one's level of skills; a key part of the GMC requirements in a practicing physician as stated in 'Tomorrows doctor'.

This was not a mandatory course and so no formal record of attendance was maintained. However, as the questionnaire results show, not all students were present at the sessions sampled

and so therefore it is felt that attendance variable. By measuring attendance it could ensure that teachers' time wasn't wasted by poor attendance. Also, poor student attendance in some sessions could be related to the students have less interest in those particular topics.

As not all of the FY1 teachers were Nottingham graduates there was some lack of familiarity with the course and the level of knowledge required. In future there could have been a formal pre-course session as well as the syllabus in order to ensure all teachers were aware of the objectives. Perhaps, this could be addressed by having a document similar to the 'FOOT book' designed for final year students. Having a document targeting CP1 students might help in standardizing the course. In the future the teachers could be questioned as well as the students to ensure that the CP1 FY1 course offered an effective teaching as well as learning opportunity. Teachers could also be questioned about student attendance so it could be measured without student awareness to keep a low- pressure environment. However, if felt it would benefit the course a more formal register could be kept, asking the students before- hand.

Limitations

- The FY1 led CP1 course was intended as an adjunct to the main faculty and this is how the course transpired so not all improvement seen in the students can be attributed to the CP1 FY1 course.
- The number of students (16 in total) was very small and only 9 students completed the mid-course and post-course questionnaires.

Conclusion

This newly introduced course was well received by the students at Lincoln. Another reason for the success of this course could be because the students live in hospital accommodation during the module at Lincoln and hence were able to attend evening sessions. This might not be possible in other hospital sites where students don't stay on site. The results of this pilot study are promising and extension of the programme in future years seems likely to improve learning opportunities for the students. Finally, new innovations to currently existing teaching programmes like this one should always be encouraged as they not only provide the medical students with good quality teaching but also train our young doctors as teachers of the future.

Finally, this programme can be extended further focusing on the following:

- To investigate whether such a programme would succeed in a larger centre and what changes would be necessary to ensure such success.
- To divide students between those whom are undergraduate and those who are graduate entry to measure how the pre-clinical experience affects a student's engaging with the teaching programme and their confidence levels therein.

- A future study could also measure the impact of the course on the teachers and their own attitudes and confidence with near-peer teaching.

Conflict of Interest: None declared.

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Table 1: Student confidence in history taking, examination & diagnostic ability

Confident in Examination skills			
	Pre-course	Mid-way	Post-course
No.	13	0	0
Confident in History skills			
	Pre-course	Mid-way	Post-course
Yes.	3	8	9
No.	13	1	0
Good practice in diagnoses			
	Pre-course	Mid-way	Post-course
Yes.	0	3	4
No.	16	6	5

Table 2: Student perception of the usefulness of the teaching programme

FY1 teaching will be/has been useful			
Strongly agree.	16	2	8
Agree.	0	7	1
Disagree.	0	0	0
Strongly disagree.	0	0	0

Table 3: Student views about the continuation of FY1 lead teaching in subsequent years

Should the FY1 led teaching continue beyond the pilot year	
Strongly agree	8
Agree	1
Disagree	0
Strongly disagree	0

Table 4: Student Confidence Before and After Each Session Sampled from Students

	Student.									
	1	2	3	4	5	6	7	8	9	Average.
Cardio. Exam. Before.	5	6	7	2	8	3	2	7	5	5
Cardio. Exam. After.	9	8	9	8	9	7	6	8.5	9	8.16666667
Change.	4	2	2	6	1	4	4	1.5	4	3.16666667
Resp. Exam. Before.	5	6	7	2	9	3	4	6	4	5.11111111
Resp. Exam. After.	9	7	9	8	9	8	6	8.5	8	8.05555556
Change.	4	1	2	6	0	5	2	2.5	4	2.94444444
Abdo. Exam. Before.	8	3	7	2	8	4	6	5	4	5.22222222
Abdo. Exam. After.	10	8	9	8	8	8	8	8	9	8.44444444
Change.	2	5	2	6	0	4	2	3	5	3.22222222
CNS Exam. Before.	2	7	6	2	8	2	4	5	2	4.22222222
CNS Exam. After.	9	8	8	7	8	6	8	8	7	7.66666667
Change.	7	1	2	5	0	4	4	3	5	3.44444444
PNS Exam. Before.	5	6	5	2	8	2	4	5	2	4.33333333
PNS Exam. After.	9	8	7	7	8	6	8	8	7	7.55555556
Change.	4	2	2	5	0	4	4	3	5	3.22222222
Vasc. Exam. Before.	0	6	1	2	8	2	2	5	0	2.88888889
Vasc. Exam. After.	8	8	4	7	8	3	6	8	6	6.44444444
Change.	8	2	3	5	0	1	4	3	6	3.55555556
H&N Exam. Before.	0	3	1	2	8	2	1	5	0	2.44444444
H&N Exam. After.	1	6	2	5	8	4	4	8	6	4.88888889
Change.	1	3	1	3	0	2	3	3	6	2.44444444
Cardio. History. Before.	3	7	4	3	8	3	5	5	2	4.44444444
Cardio. History. After.	7	8	8	9	8	7	8	8	8	7.88888889
Change.	4	1	4	6	0	4	3	3	6	3.44444444
Resp. History. Before.	3	7	3	3	8	3	5	5	2	4.33333333
Resp. History. After.	8	8	8	9	8	6	8	8	9	8
Change.	5	1	5	6	0	3	3	3	7	3.66666667
Gastro/Surg. History. Before.	2	2	1	3	8	3	2	5	1	3
Gastro/Surg. History. After.	7	6	8	9	8	7	8	8	8	7.66666667
Change.	5	4	7	6	0	4	6	3	7	4.66666667
NS History. Before.	1	6	1	2	8	3	3	5	1	3.33333333
NS History. After.	5	6	4	7	8	6	4	8	6	6
Change.	4	0	3	5	0	3	1	3	5	2.66666667
Renal/Endocrine History. Before.	0	5	1	2	8	3	3	5	0	3
Renal/Endocrine History. After.	6	6	7	6	8	6	6	8	6	6.55555556
Change.	6	2	6	4	0	3	3	3	6	3.66666667

Present at the Mock Practical Exam

Appendix 1: List of timetabled sessions in the teaching programme

Clinical Examination sessions:

Cardiac examination	Respiratory examination
Abdominal examination	Peripheral Nervous System examination
Central Nervous System examination	Vascular examination
Head & Neck examination	

History taking sessions:

Cardiology & Vascular history (Acute Coronary Syndrome, Heart Failure, leg ulcers, intermittent claudication, etc.)
Respiratory history (Asthma, COPD, Pulmonary fibrosis, etc.)
Abdominal/surgical history (Jaundice, pancreatitis, Alcoholic liver disease, etc.)
Renal/Endocrine history (Renal failure, renal transplant, Diabetes mellitus, Thyroid disease, Cushings, Addisons, etc.)
Nervous system history (Stroke, Multiple Sclerosis, Parkinsons, Motor Neuron Disease, etc.)

In addition, there were three flexible sessions at the end of the course to focus on topics which were of interest to the students.