



WJMER

World Journal of Medical Education and Research

An Official Publication of the Education and Research Division of Doctors Academy

Differentiating a Metastatic Breast Cancer and an Eccrine Tumour

Effect of Povidone-Iodine Dressings on Surgical Site Infection Rate: A Randomised Controlled Trial

The Role of Metacognitive Awareness of Reading Strategies as a Predictor of Academic Achievement

Standardised Patients versus Student Role Players in the Teaching of Undergraduate Medicine Communication Skills

Running thread: Foundation doctors' attitude to Psychiatry

Academic Efficacy and Cost Analysis of a Free-To-Use Bedside Teaching Programme in Enhancing The Learning Experience of Medical Students: A View From a UK Teaching Hospital

Impact of Health Education on Breast Self-Examination Among Nursing Students

6th International Academic and Research Conference, Manchester, UK, 2016

DOCTORS ACADEMY



BETTER EDUCATION. BETTER HEALTH.

ISSN 2052-1715





Academic Efficacy and Cost Analysis of a Free-To-Use Bedside Teaching Programme in Enhancing The Learning Experience of Medical Students: A View From a UK Teaching Hospital.

Lewis M; FitzMaurice T; Fairclough G; Guha A

Institution

Royal Liverpool &
Broadgreen University
Hospitals NHS Trust
Prescott Street, Liverpool,
L7 8XP, UK.

**WJMER, Vol 12: Issue 1,
2017**

Abstract

A decline in bedside teaching of medical students has been noticed worldwide. Our study incorporates an online platform to demonstrate increased uptake and delivery of this important method of teaching with a reduced cost. In addition, it demonstrates a high degree of satisfaction amongst the users, which includes both tutors and students.

Key Words

Medical education, Medical students, Online platform, Efficiency

Corresponding Author:

Mr Guha A; E-mail: arpanl@yahoo.com

Introduction

The consultation between doctor and patient remains amongst the most intimate aspects of medical practice. Patients gain reassurance, information and care from a well-structured, compassionate doctor with carefully honed communication skills. A physical examination by the doctor is often expected by patients and, thorough clinical history and examination has been shown to enable a doctor to make a bedside diagnosis in 73% of cases.^{1,2}

There is consensus across the literature that bedside teaching is integral to medical education¹⁻⁹, yet despite this the proportion of teaching time allocated for formal bedside teaching in the United Kingdom has fallen from 75% in the 1960s to an estimated 8% in 2015¹⁰.

There are number of key barriers hypothesised to contribute to the decline of true bedside teaching in hospitals. These include concerns of inconveniencing patients, under confident students, and overcoming intimacy boundaries¹⁰. A major logistical barrier to bedside teaching has been the lack of time available to doctors to teach students¹¹. There are more patients being admitted to hospital and they are staying for less time, causing a dramatic increase in patient turnover^{1,2,6}. As a student, finding tutors with time to spare in a large, busy hospital, with frequent rotations through departments, can be a daunting and often difficult

prospect.

Objectives

The work was carried out at a university-affiliated teaching hospital. At any one time our hospital has approximately 900 inpatients and 80 3rd and 4th year medical students (pre-finals, clinical students). Across the Hospital there are almost 400 qualified doctors at the pre-specialist registrar stage of training: 57 foundation year one (FY1) doctors, 80 foundation year 2 (FY2) doctors and approximately 250 doctors in core training. Providing good bedside teaching in such a large environment can prove difficult. Indeed, at our hospital, there was no formal bedside teaching (scheduled sessions on students' timetables). However, students are expected to complete an electronic portfolio of clinical cases, which in practice may result in students examining patients without supervision and requesting their forms be signed upon case presentation rather than examination.^{1,12} Due to time constraints, doctors are often unable to give useful feedback on students' presentations without critical appraisal of examination techniques or bedside manner. Ward rounds, due to time pressure, frequently lack a teaching element. From our experience this leads to a lack of spontaneous, opportunistic bedside teaching events on the wards. Informal teaching by doctors with paper-based advertising and sign-up sheets were often missed on busy noticeboards, and could be difficult to access by students off-site.

Our aim was to overcome these logistical barriers and facilitate a programme of bedside teaching via an online sign-up system. Ideally, the system would facilitate near-peer bedside teaching of clinical, pre-finals medical students, by junior doctors. Junior doctors were chosen to facilitate sessions as several studies have shown that bedside teaching by more junior doctors is equally well received and shows no statistical difference in examination scores, compared with consultant and registrar teaching, whose time is limited and more limited and costly^{4,8,11,13}

Methods

The project was administered and designed by junior doctors enrolled in the Academic Foundation Programme in medical education. The three essential components to bedside teaching are doctors, students and patients. Given the large numbers of students and doctors, and the time pressures on both these groups, the programme had to be both flexible and easily to administrate. FYI doctors – arguably those with the most unpredictable schedules – were initially excluded as tutors, in order to make tutor attendance more reliable. Later in the programme, FYIs were invited, if able to cover their ward commitments adequately.

Tutors were incentivised to sign-up with portfolio certificates detailing the number of hours of commitment to teaching. In addition, each student completed a feedback form which the tutor could use for their portfolio. Sessions were created according to the times, dates and topics specified by the tutor (doctor). Session length was restricted to between one and three hours, and topics were limited to a pre-set list based on the undergraduate syllabus.

Patients were recruited by the tutor prior to the session. To ensure patients were prepared for the session, each doctor was instructed to consent the patients and agree a time with them. Furthermore, doctors were asked to provide information as to which patients were being examined to ensure certain patients were not being visited too frequently.

We used a free, online sign-up system, Volunteerspot™ (since renamed as SignUp.com™) as the electronic interphase to collate all the above information. Volunteerspot™ is a free website, which can be accessed via any device with internet access. It facilitates the use of customised calendars to create specific sign-up slots accessible to those with a unique login code. Tutors were invited to use this to enter their desired times, topics and pre-session instructions.

Monthly calendars were sent in advance to all F2-CT2 doctors requesting that those interested specify their session times and topics on the calendar, committing them to that session. This list was reviewed by a junior doctor administrator, who used this information to create a “Medical Student” calendar, which was then emailed to the medical student cohort. Students were allowed to select a maximum of three bedside teaching sessions in any one month. Group sizes were initially set to 6:1 (students per teacher) and subsequently reduced to 4:1, as discussed in the results.

The entire system could be monitored by the administrator, and automated reminders about the teaching were sent out to both students and tutors, to maintain high attendance rates. The administrator was alerted to cancellations by the online system, which allowed up-to-date attendance lists, and flexibility in session scheduling.

Each student was supplied with feedback forms to complete about the tutor and the programme. Each tutor was given an examination checklist, and a questionnaire about the programme. The results of these are discussed below. Both qualitative and quantitative information (Likert scale) were collected. After 10 weeks, a questionnaire¹³ was sent out to all students who had participated for comparison with the feedback received at the end of each session.

Results

Between 7th September to 17th November 2015 a total of 63 sessions were taught by 21 different doctors, and this group was used for the data analysis, as discussed below. This equated to 109.5 hours of teaching for 196 student/tutor interactions. The capacity for these 63 sessions was 306 students. 110 potential slots went unfilled, giving an overall successful sign-up rate of 64.1%.

Student and tutor data:

The 21 tutors returned a total of 23 forms from the 63 sessions run.

90 end of session feedback forms were returned by students, the response rate to the end-of-session student questionnaires was 52.04% (n=204). 98.9% enjoyed the teaching, 100% would recommend it, and 92.6% felt it had been useful for their learning. 79.8% of students said that they would be confident performing the examinations in their University OSCEs (Objective Structured Clinical Examinations). 17.7% said they would prefer a paper-based sign up. [Table 1]

A total of 27 (45.8%) of 59 students replied to the end-of-programme questionnaire, designed to gain a representation of overall opinions on the programme. This was similar to end-of-session feedback [Table 2]

Feedback from tutors	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total	%Agree/Strongly Agree
I enjoyed the teaching session	16	7	0	0	0	23	100.00%
I feel the scheme was well organised	10	13	0	0	0	23	100.00%
I would prefer a paper based sign-up	0	1	9	11	2	23	4.35%
I understood what I was supposed to be teaching	11	12	0	0	0	23	100.00%

Table 1: Feedback from tutors

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total	%Agree/Strongly Agree
The group size of maximum six or less was appropriate	7	8	4	7	1	27	55.6%
The group size of maximum four or less was appropriate	15	7	4	1	0	27	81.5%
The tutors were well prepared for the sessions	10	13	4	0	0	27	85.2%
The tutors were able to give constructive advice	16	10	1	0	0	27	96.3%
The tutors gave helpful feedback on performance	16	10	1	0	0	27	96.3%
There were enough sessions available	8	4	3	12	0	27	44.4%
Following this teaching and learning session, I feel more prepared for forthcoming examinations	13	13	1	0	0	27	96.3%
I consider the use of bedside teaching as an appropriate adjunct to the programme	20	5	0	0	2	27	92.6%
I would recommend the programme to other students	24	3	0	0	0	27	100.0%

Table 2: Summary of end-of-programme questionnaire distributed to all students who participated in the project

Students' feedback on the programme	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total	%Agree/Strongly agree
I enjoyed the teaching session	64	25	1	0	0	90	98.89
I feel the scheme was well organised	60	27	3	0	0	90	96.67
I would prefer a paper based sign-up	8	7	23	35	12	85	17.65
The examinations covered were relevant to my learning needs	73	17	0	0	0	90	100.00

Table 3: Summary of the quantitative feedback received from students about the programme itself.

Students' Feedback on tutors	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total	% Agree/Strongly agree)
The tutor was knowledgeable about the topic	96	14	0	0	0	110	100.0%
The tutor explained things well	96	18	0	0	0	114	100.0%
I would be confident performing this in an OSCE	37	54	20	3	0	114	79.8%
I felt comfortable asking questions	94	20	0	0	0	114	100.0%

Table 4: Summary of the quantitative feedback received from students about tutors.

Traditional tutor recruitment		Bedside teaching programme	
Per speaker (one speaker per session):		Per month:	
Generate email and send to Educational Lead providing Dates & times	15 mins	Generate tutor calendar and distribute	15 mins
Once Education Lead has confirmed speaker, email speaker to confirm	10 mins	Collate tutor sessions, generate student calendar and distribute	1 hour
14 days prior email speaker as a reminder	10 mins	Review student sign ups	15 mins
Email trainees title and speaker	10 mins	Collate tutor hours and send out certificates	1 hour
If speaker does not confirm an additional email needs to be sent	5 mins		
	50 mins		
	16 hours (for 20 sessions)		2.5 hours (for 20 sessions)
Weekly administration:		Weekly administration:	
Collate feedback	15 mins	Collate feedback	15 mins
Send feedback to speaker	10 mins	Send feedback to tutors	50 mins
Email feedback and thank you letter to speaker	5 mins	Following up non-attenders	10 mins
Following up non-attenders	10 mins		
	40 mins		1 hour 15 mins
For 20 sessions a month (one tutor per session):	~19.5 hours		~7.5 hours

Table 5: Cost analysis of the project

Summary of the quantitative feedback received from students about the programme itself showed very positive responses [Table 3]. This was replicated for student perspective on tutors [Table 4].

Cost analysis

A cost analysis was performed with help from the

administrative staff of the hospital's undergraduate education centre, comparing the length of time – and hence cost – needed to recruit a number of teachers for similar, formal sessions. [Table 5].

Discussion

The ongoing decline in the use of bedside teaching as a method of fulfilling the learning needs of

medical students seems to be a resource issue rather than an inherent problem with the educational validity. In fact, the evidence suggests that bedside teaching enables students to consolidate their communication, examination and history taking skills in a real-world setting. This situated learning style is supported by a number of educational theorists¹⁴.

The aim of this project was to mitigate the effects of perceived unavailability for teaching that have become prominent in busy teaching hospitals and provide a solution that satisfied the learning requirements of students and the teaching requirements of doctors.

This study illustrates an alternative approach to delivering bedside teaching. It demonstrated an efficient means of delivering 63 doctor led sessions over 50 days, requiring administration by only one person. In addition to the efficiency of the system, the consensus from the feedback was that bedside teaching was very much enjoyed by the students and tutors alike. This reflects findings from similar studies^{1-9, 10, 13, 15, 16}.

The switch to an online system was straightforward, and despite initial problems with explanation of the system, it was well received by students and tutors, with the majority preferring it to a paper system. The project demonstrated an efficient means of organising undergraduate teaching and delivering a large number of teaching sessions with relatively few tutors.

The time (and hence cost) savings of an online system are a major advantage of this project. The online sign-up system allowed students and tutors to select their own slots, saving administration time. Any cancellations could be seen on the calendar, and attendance reminders were automatically sent out by the system. Data on attendances was immediately available in an electronic format, which saved time for data synthesis – for example in calculating number of hours that tutors had taught. Students did not have to attend the hospital education centre to sign-up, and did not miss the opportunity to sign-up because they had not spotted the sign-up sheet. The online system can be accessed remotely by the administrator, so the programme can be coordinated across different hospital sites.

A number of studies that have correlated higher examination results with bedside teaching^{5, 17, 18}; however there is no evidence from this study that bedside teaching improved students' examination skills. To draw inferences on this would be difficult given the large amount of heterogeneity in teaching

style and content between tutors.

From the questionnaires, there were three key criticisms of the programme. Firstly the students felt there were not enough sessions available, and this is partially reflected in Table 2. Secondly, they felt group sizes were too large, this was addressed by reducing group sizes from six to four after September. Lastly, some students felt that a "first-come-first-served" system was unfair. However, the teaching that took place would not otherwise have occurred, so formalisation into 'slots' that can be filled on a first-come-first-serve basis does not represent a monopolisation of teaching. The high number of unfilled slots would also suggest that supply exceeds demand for some sessions.

We also feel that there is scope for further development. Teaching sessions in our programme would occasionally clash with other University or hospital activities for students. A combined online timetable incorporating all the teaching activities could help minimise these issues.

Although the Volunteerspot™ sign-up system saved administrative time and allowed geographically distant students to sign up with ease, the system as used by us was an adaptation from its original purpose, and did have some areas for improvement. As described above, creation of slots was a two-step process that was labour-intensive for the administrator, and the user interface was reported by some doctors as confusing. A bespoke, web-based sign-up platform would be ideal.

Conclusion

The purpose of this project was to deliver structured, clinician-led bedside teaching to all 3rd and 4th year medical students at our Hospital. This was achieved, and was well-received by tutors and students alike.

We feel this programme has capacity to expand, accommodating more topics and students. On the basis of the positive feedback received, and interest from doctors at other hospitals, we hope to expand the scheme to more hospitals in the near future.

A key area for development would be to integrate this programme into the medical school's undergraduate curriculum, with production of an (online) timetable summarising all teaching sessions at the hospital.

References:

1. Peters M, ten Cate O. Bedside teaching in medical education: a literature review. *Perspect Med Educ.* 2013; 3(2):76-88.
2. K Ahmed M. What is happening to bedside clinical teaching?. *Med Educ.* 2002; 36(12):1185-1188.
3. Stolberg M. Bedside Teaching and the Acquisition of Practical Skills in Mid-Sixteenth Century Padua. *Journal of the History of Medicine and Allied Sciences.* 2013; 69(4):633-664.
4. Chapman R, Wynter L, Burgess A, Mellis C. Can we improve the delivery of bedside teaching?. *The Clinical Teacher.* 2014; 11(6):467-471.
5. Salam A, Siraj H, Mohamad N, Das S, Yousuf R. Bedside teaching in undergraduate medical education: Issues, strategies, and new models for better preparation of new generation doctors. *Iranian Journal of Medical Sciences.* 2011; 36(1):1-6.
6. LaCombe M. On Bedside Teaching. *Annals of Internal Medicine.* 1997; 126(3):217-220.
7. Qureshi Z. Back to the bedside: the role of bedside teaching in the modern era. *Perspect Med Educ.* 2014; 3(2):69-72.
8. Qureshi Z, Seah M, Ross M, Maxwell S. Centrally organised bedside teaching led by junior doctors. *The Clinical Teacher.* 2013; 10(3):141-145.
9. Qureshi Z, Maxwell S. Has bedside teaching had its day?. *Advances in Health Sciences Education.* 2011; 17(2):301-304.
10. Jones P, Rai B. The status of bedside teaching in the United Kingdom: the student perspective. *AMEP.* 2015; 421.
11. Ramani S, Leinster S. AMEE guide no. 34: teaching in the clinical environment. *Medical Teacher.* 2008; 30:347-364.
12. Ramani S, Orlander JD, Strunin L, Barber TW. Whither Bedside Teaching? A Focus-group Study of Clinical Teachers. *Academic Medicine.* 2003 Apr 1;78(4):384-90.
13. Woods R, Ramasubbu B, Donohoe C, Hennessy M. Near-peer bedside clinical teaching: example of a successful programme. *The Clinical Teacher.* 2014; 11(6):472-477.
14. Taylor DCM, Hamdy H. Adult learning theories: Implications for learning and teaching in medical education: AMEE Guide No. 83. *MEDICAL TEACHER VOL. 35, ISS. 11, 2013*
15. Williams K, Ramani S, Fraser B, Orlander J. Improving Bedside Teaching: Findings from a Focus Group Study of Learners. *Academic Medicine.* 2008; 83(3):257-264.
16. Nair B, Coughlan J, Hensley M. Student and patient perspectives on bedside teaching. *Medical Education.* 1997; 31(5):341-346.
17. Roberts L, Lu W, Go R, Daroowalla F. Effect of Bedside Physical Diagnosis Training on Third-Year Medical Students' Physical Exam Skills. *Teaching and Learning in Medicine.* 2014; 26(1):81-85.
18. Favrat B, Pécoud A, Jaussi A. Teaching cardiac auscultation to trainees in internal medicine and family practice: Does it work? *BMC Medical Education.* 2004; 4(1):5

The World Journal of Medical Education & Research (WJMER) is the online publication of the Doctors Academy Group of Educational Establishments. It aims to promote academia and research amongst all members of the multi-disciplinary healthcare team including doctors, dentists, scientists, and students of these specialties from all parts of the world. The journal intends to encourage the healthy transfer of knowledge, opinions and expertise between those who have the benefit of cutting-edge technology and those who need to innovate within their resource constraints. It is our hope that this interaction will help develop medical knowledge & enhance the possibility of providing optimal clinical care in different settings all over the world.



WJMER

World Journal of Medical Education and Research

An Official Publication of the Education and Research Division of Doctors Academy

