ORIGINAL ARTICLE

Qualitative evaluation of a formal bedside clinical teaching programme in an emergency department

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Background: Bedside clinical teaching in emergency departments is usually opportunist or ad hoc. A structured bedside clinical teaching programme was implemented, where a consultant and registrar were formally allocated to teaching and learning roles separated from the usual departmental management or clinical roles. Themes emphasised included clinical reasoning, practical clinical knowledge, communication, physical examination, procedural and professional skills.

Aim: To evaluate the perceived educational value, effects on patient care and areas for ongoing development.

Methods: The study setting was an urban, tertiary referral, university-affiliated emergency department with prospectively allocated educational shifts of 4 or 5 h duration over a 6-month period. Evaluation was by session and course evaluation questionnaires, with respondents ranking predetermined themes and giving free-text responses. Qualitative presentation of results allowed exploration of the themes identified.

Results: Learners ranked history taking and physical examination technique as the most frequently learnt item, but clinical reasoning as the most important theme learnt. Informal discussion and performance critique or constructive feedback were the most frequent teaching methods. The biggest obstacle to learning was learner apprehension. The most frequent positive effect on patient care was faster management, decision making or disposition. Most often, no negative effect on patient care was identified.

Conclusion: Formal bedside teaching is effective if organised with adequate staffing to quarantine the teacher and learner from routine clinical duties, and concentrating on themes best taught in the patient setting. Clinical reasoning and clinical knowledge were perceived to be most important, with positive effects on patient care through more thorough assessment and faster decision making.

Many factors in the emergency department can make bedside clinical teaching difficult. It is obviously resource intensive, and, in view of increasing workload and need for efficiency in clinical departments, service provision and patient care may take priority over teaching when resources are limited. There may also be factors specific to the learner, teacher, patient, environment and ethical issues. Nevertheless, bedside teaching has benefits in terms of role modelling, staff recruitment and retention, formative assessment of learner's performance, continuing professional development of the teacher and quality improvement, both clinically and educationally. Clinical teaching is a necessity to continue the development and training of junior doctors, and studies are required to determine optimal resource utilisation when teaching in clinical areas.¹

Although bedside emergency medicine teaching has been advocated for diverse grades of emergency training, it is usually opportunist and uses an ad hoc approach.^{2–3} Positive individual teaching practices are well described, as well as other teaching methods such as simulation, skills workshops and lectures, but there are few reports on evaluation of a formal bedside teaching programme.^{4–8} Direct observation of history taking or physical examination skills at the bedside by senior staff is infrequently or never undertaken for emergency medicine trainees.^{9–10} Shayne *et al*¹¹ described a non-clinical teaching shift for attending emergency physicians, which included an element of bedside teaching as well as lectures and skills laboratories. Their study found that an unstructured approach with potential disruption of patient flow was unpopular with teachers. Eventually, their bedside teaching became largely one of clinical evaluation (formative assessment of competencies) of residents, which was the least disruptive in terms of learner and patient flow.

Although feedback was given, this teaching programme was not designed to give opportunities for demonstration of skills, informal discussion, role modelling or critical questioning. Cydulka *et al*¹² describe a similar programme, which also emphasised trainee performance assessment. Neither of these studies evaluated the educational benefits or effects of the programme on patient care in detail. Alam *et al*¹³ described a programme of dedicated teaching shifts, but did not describe the perceived clinical effect and problems of such teaching.

A clinical teaching programme where a consultant and registrar were formally allocated to teaching and learning roles, respectively, while on duty, was introduced to our emergency department in the second half of 2004. The programme was qualitatively evaluated to determine whether the experience was perceived to be educationally valuable, whether learning was thought to have occurred, whether there were perceived positive or negative effects on patient care and whether the programme needed to be changed, improved or discontinued. This paper aims to report on this evaluation to guide others who may be considering a formal bedside clinical teaching programme in their emergency department.

METHODS

Setting

The study was conducted in the Emergency Department of Sir Charles Gairdner Hospital (Nedlands, Western Australia, Australia), an urban tertiary referral university-affiliated hospital with an annual emergency census in 2004 of

Abbreviations: CEQ, course evaluation questionnaire; SEQ, session evaluation questionnaire

approximately 46 000 patients with a 44% admission rate. The department is staffed by approximately 11 full-time equivalent consultants, 15–20 registrars and 10 junior grade doctors. Most registrars are trainees of the Australasian College for Emergency Medicine (West Melbourne, Victoria, Australia), and have 6-month rotations in each training post.

Process

When there were sufficient consultant staff on a shift, one was identified on the roster as the “clinical teacher” for the shift, and a registrar was allocated to be the clinical learner when their shift coincided. These roles were separated from the usual departmental management or clinical workload roles, and the programme was in addition to the existing departmental continuing education, grand rounds and examination preparation programmes. Prospective allocation ensured that registrars were as evenly allocated as possible and that teaching consultants were aware of their teaching commitments. The programme was formally introduced to all participants before starting, to describe the principles of clinical supervision, study process, possible teaching themes and evaluation of outcomes. This study was formally registered as a quality improvement activity with our institution. Trainee participation in the teaching sessions or evaluation was voluntary.

At the beginning of each teaching session, a briefing was held between the teacher and trainee to determine learning needs and session objectives. The teacher then shadowed the learner for the entire session, especially observing and teaching at the bedside.¹⁴ Clinical teaching was opportunistic, according to the activity and patient case-mix in the department at the time, but concentrated on the themes thought to be most suitable for teaching in a clinical setting. These included procedural skills, clinical reasoning and decision making, practical clinical knowledge, communication skills, physical examination skills, and professional skills and attitudes, including skills in departmental management.¹⁵ Content that could be taught outside the clinical context were avoided, as they may well have been taught more efficiently by other methods such as lectures, tutorials, or skills or simulation workshops. The sessions were rostered as lasting between 4 and 5 h, corresponding to overlap in consultant and registrar shifts. A debriefing session was held at the end of each session to evaluate the teaching and learning, with the trainee filling out evaluation forms.

Data collection and reporting

Session evaluation questionnaires (SEQs) were obtained for each of the individual teaching sessions, including items to describe the teaching methods, learning experience and outcomes, problems encountered and suggestions for change. Response items were a combination of ranking of predetermined themes and the opportunity for free-text responses. At the end of the 6-month trial period, registrars and consultants filled out course evaluation questionnaires (CEQs) for the entire process, similar to the SEQs in format and with corresponding individual items. Results are presented in a qualitative format to allow exposition of the themes identified by the feedback questionnaires and, where appropriate, free-text responses are categorised into similar themes. Themes are reported in this paper whenever more than one learner or teacher identified them in the SEQ or CEQ responses.

Statistical analysis

Data were tabulated and analysed using SPSS V.12.0.1. Free-text responses from the SEQs and CEQs were categorised into similar themes, tabulated, and had frequencies described.

Table 1 Teaching allocation and response rates

No of registrars allocated	18
No of registrars taught	13 (72%)
	2 had 7 shifts each
	4 had 4 shifts each
	1 had 3 shifts
	5 had 2 shifts each
	1 had 1 shift
	4 had 0 shifts (unsuitable rostering)
	1 refused teaching
Clinical teaching shifts allocated	51
Clinical teaching shifts performed	44 (86%)
	2: suitable registrar not present
	2: registrar refused session
	1: session clashed with other teaching
	1: consultant not aware
	1: unknown
SEQs completed	25/44 (57%)
Learner CEQs completed	9/13 (69%)
Tutor CEQs completed	8/11 (73%)

CEQ, course evaluation questionnaire; SEQ, session evaluation questionnaire.

RESULTS

Table 1 shows the allocation rates of teaching shifts to registrars and consultants, with completion rates for SEQs and CEQs.

Learners ranked the following items in decreasing order of frequency as the most frequently learnt in their end-of-session SEQ responses:

- history taking and physical examination technique
- examination practice
- procedural skills
- clinical reasoning skills or emergency department decision making
- experienced or structured approach to emergency department presentations
- investigation interpretation
- linking basic science knowledge to clinical practice
- communication skills
- prioritisation of care
- administrative issues
- acute coronary syndromes
- helpful hints or shortcuts
- application of evidence-based medicine
- reassurance of current clinical practice
- teamwork.

In their end-of-programme CEQ responses, learners ranked the following items in decreasing order of frequency as the most important thing learnt:

- experienced or structured approach to emergency department presentations
- insight into the rapid assessment approach
- history taking and physical examination technique
- focusing on the emergency department context of presentations.

Tutors in their end-of-programme SEQ responses ranked the following items in decreasing order of frequency as the most important thing learnt:

- efficient time management
- investigation interpretation

- experienced or structured approach to emergency department presentations
- linking basic science knowledge to clinical practice
- communication skills
- application of evidence-based medicine.

When the clinical teaching themes were ranked in order of importance, clinical reasoning was the skill ranked highest by learners and teachers (table 2). Complete data for this question were available from 20 of 25 learner SEQs. Procedural skills, often thought to be important to teach in the bedside environment, were ranked lowest.

When asked what was their best learning experience during the session, learners in their SEQs ranked the following in decreasing order of frequency:

- informal discussion
- performance critique or constructive feedback
- approach to patient assessment
- minilectures
- critical questioning
- direct observation
- examination practice
- demonstration
- one-to-one teaching
- rapid assessments of patients.

End-of-programme CEQs from the learners ranked the following learning experiences in decreasing order of frequency:

- informal discussion
- performance critique or constructive feedback
- direct observation
- critical questioning.

Tutors in their end-of-programme CEQs ranked the following learning experiences in decreasing order of frequency:

- informal discussion
- direct observation
- performance critique or constructive feedback
- critical questioning
- demonstration.

The obstacles to learning during a given session identified by learners in their end-of-session SEQs in decreasing order of frequency were:

- apprehension of being evaluated
- busy department
- time management

- lack of suitable patients
- paperwork
- distractions from other patients previously seen
- interruptions on the floor
- waiting for patient investigations to occur.

Obstacles to learning identified by learners in their end-of-programme CEQs in decreasing order of frequency were:

- busy department
- time management
- lack of suitable patients
- distractions from other patients previously seen
- paperwork
- interruptions on the floor.

Tutors at the end of the programme identified the obstacles to learning in decreasing order of frequency as:

- busy department
- 5-h length of the allocated sessions
- inability to get learners to articulate clear learning requirements.

Most often, no negative effect on patient care was identified in the SEQs and CEQs. Where a negative effect was identified, learners noted in their SEQ responses that patients seen before the session had to wait longer and less frequently, leading to decreased numbers of patients processed per hour. Both learners and tutors noted in their end-of-programme CEQs that a negative effect on patient care corresponded to decreased numbers of patients processed per hour.

The positive effects on patient care noted by learners in their end-of-session SEQs, in decreasing order of frequency, were:

- faster management, decision making or disposition
- availability of a senior second opinion
- more thorough assessment and processing
- none
- application of a team approach.

Similarly, in the end-of-programme CEQs, learners noted the availability of a senior second opinion as the most frequent positive effect on patient care. Tutors in their CEQs identified the following positive effects on patient care in decreasing order of frequency:

- more thorough assessment and processing
- faster management, decision making, or disposition
- availability of a senior second opinion
- patients feeling better cared for.

Table 2 Ranking of learning themes achieved (medians) using an ordinal scale of 1 (highest ranking) to 6 (lowest ranking)

	Learner SEQs (n = 20)	Learner CEQs (n = 9)	Tutor CEQs (n = 8)
Clinical reasoning	2	1	2.5
Clinical knowledge	2	2	4
Professional skills	3	4	3
Communication skills	3	4	4
Physical examination skills	4	4	5
Procedural skills	5	5	5

CEQ, course evaluation questionnaire; SEQ, session evaluation questionnaire.

The most frequent suggestion from SEQs for future improvement of the teaching programme was to start the session at the start of a shift without a pre-existing patient load, followed by more time, no change, and prior preparation or awareness of what was involved. The most frequent suggestion for improvement from both learners and tutors from the end-of-programme CEQs was to limit the sessions to 2–3 h. Tutors also identified the need for registrars to make a list of specified learning objectives with a personal focus.

DISCUSSION

Our bedside clinical teaching programme was started in response to feedback from our junior staff regarding possible improvements to our education programme. We recognised that an important part of its evaluation would be to seek their perception of the educational benefits and the clinical effect of such a programme. Although the evaluation was generally positive, modifications were made to the bedside clinical teaching programme for subsequent groups of trainees. A continuing “clinical teacher” shift was permanently rostered on a weekly basis and formally allocated to teachers and learners. Owing to evaluations suggesting that 5 h was too long, each learner was allocated 2 h and each tutor was able to teach two learners during an allocated 4-h shift. The other commonly cited problem with the original implementation of the course was that the bedside teaching began halfway through a registrar shift, when there were patients who had already been partially assessed. This caused interruptions during the bedside teaching due to ongoing management requirements of these patients. Accordingly, the other substantial modification was to start the teaching at the beginning of the registrar shift so that there were no previous patients to be attended to.

Patient care should take precedence over clinical education when there are limited resources. However, in prolonged periods of economic rationing or incessant high workload, this could result in continued neglect of the educational needs of students and trainees.¹⁶ A recent review showed no available evidence for the effect of emergency department crowding on clinical education.¹⁵ Another study disproved that clinical productivity is performed to the detriment of clinical teaching, but this could be due to adequate resource allocation at the centres that are able to study this topic.¹⁷ In this study, access block caused inefficient use of clinical teaching time. There were delays in obtaining suitable privacy for teaching, as patients were often doubled up in cubicles or were placed in the waiting room.

Limitations

Our study has several potential limitations. Our response rate was moderate and our sample size small, raising the possibility that the data may over-represent subjects who had more strongly expressed views about the value or otherwise of a bedside clinical teaching programme. We were only able to assess perceptions and not true learning or changes in behaviour. Completion of questionnaires by registrars might have been biased by a willingness to help, as the study was not blinded and they knew the expectations of the study. They may have also been less diligent in their responses, as they needed to complete the questionnaires at the end of their teaching shifts when there may have been other priorities requiring their attention. Of the 19 SEQs not completed, one trainee did not complete seven of these and also did not complete a CEQ. This may have been due to discontent with the programme, although the trainee was taught seven times and did not refuse any teaching sessions. All the other trainees completed some, if not all, of the SEQs or CEQs. This indicated that all but one of the trainees committed their opinions of the programme.

Our results are from a single centre; so the programme and the questionnaires need to be applied to other settings to ensure generalisability. The emergency department involved is integrated with an academic department of emergency medicine and has a strong educational focus. More service-driven departments may have less flexibility with rostering and learner–tutor availability, with less surge capacity to allow teaching during times of high workload. Having two clinicians with minimal clinical input for 5 h each would have considerable resource implications for departments currently struggling to maintain clinical service delivery. The impact could be minimised by scheduling shifts during periods expected to be least busy in the department, having shorter sessions, increasing the learner:teacher ratio, using consultant non-clinical time and allocating this as postgraduate medical education time, which all trainees should be entitled to. Clinical teaching sessions could also substitute some formal didactic sessions. There could then be a shift in emphasis of departmental teaching from knowledge-based didactic learning to skills-based and professional interactive learning. The other potential benefits of using extra resources for closer supervision are more rapid patient processing, fewer errors and more rapid development of skills in trainees, all of which may lead to greater departmental efficiencies in the longer term.

CONCLUSION

Our study shows that a formal programme in bedside teaching is effective if organised with adequate staffing to quarantine the teacher and learner from routine clinical duties, and concentrating on themes that are best taught in the patient setting by this resource-intensive method. The effect on patient care was perceived to be positive, with senior input into patient management resulting in more thorough assessment and faster decision making. This was at the expense of lower numbers of patients processed. Despite initial apprehension, the programme is appreciated by the learners who may not have had any similar experiences of direct observation or intensive one-to-one teaching previously.

Patient clinical assessment, procedural skills, examination practice and clinical reasoning were the themes most frequently learnt. Teaching and learning of clinical reasoning and clinical knowledge were perceived to be most important, with procedural skills least important. The perceived lack of importance of procedural skills learning dispels the oft-held notion that emergency departments are “skills laboratories”. Learners appreciate informal discussion of the experienced emergency physician approach to patient assessment and decision making in a real clinical context, suggesting that bedside tutors need to emphasise these skills during their teaching.

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