An evaluation of operative training lists for senior house officers in a district general hospital

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ABSTRACT

INTRODUCTION To address concerns about reduced opportunities for operative training, a programme of training operating lists for senior house officers was established. The entire patient pathway was used as a learning resource so that training was offered in a range of areas including development of knowledge, communication skills and attitudes as well as operative technique.

PATIENTS AND METHODS The programme was evaluated using a stakeholder approach, considering the impact on patients, the trainees and the host institution, including costs. Forty-two operations were performed during the 6-month evaluation period and the patients were compared with control patients undergoing the same procedure during a consultant-run operating list within 4 weeks.

RESULTS There was no difference in the patients' experience or overall satisfaction when comparing the trainees' patients with controls. Senior house officers performed only six other supervised operations on routine lists during the period; the programme increased their experience by 700%. Costs were increased by 12% per patient.

CONCLUSIONS There is an imperative to find new, efficient ways to train surgeons. Dedicated training operating lists with an appropriately controlled case-mix can both address a service need and provide a high intensity learning experience.

KEYWORDS

Professional competence – Graduate medical education – In-service training

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Surgical trainees have less opportunity to operate than in previous generations. Shift work, combined with fewer years as a trainee, has reduced overall hours of training and number of operations performed.^{1–5} The pressure to maintain throughput on busy lists, increased public expectations and the lack of a consistent trainee/trainer relationship may reduce senior house officers' access to operative training even when in theatre.^{4,5} Operations which form the bulk of early experience in a graduated training programme, such as repair of an inguinal hernia, are increasingly allocated to staff grade lists or evening 'Waiting List Initiative' (WLI) lists to which trainees do not usually have access.

Though the problems are widely understood, there have been few specific initiatives to improve training.⁶ This paper describes such an initiative to improve operative training opportunities for senior house officers (SHOs) by establishing designated training operating lists.

The government encourages the use of operating theatres in the evening to increase the throughput of existing

resources.⁷ However, as medical staff's hours of work are reduced, surgical staff may not be available to direct early postoperative care⁸ and it is unreasonable to perform complex major elective surgery in the evening. Low-risk patients requiring low-risk surgery are better suited to evening operating lists and can offer SHOs ideal learning opportunities.

It is assumed that surgical training is expensive but few studies have attempted to quantify training costs.^{9–11} A more robust analysis of the costs and benefits of training is required to support the business case for the provision of training time and the re-organisation required to support operative training.

This paper describes the evaluation of a programme of operative training lists for SHOs, in which the trainer is a higher trainee who has achieved the necessary competences in the procedures. The evaluation assesses the impact on patients, the trainees, and the host institution including costs.

Patients and Methods

Morecambe Bay Hospitals Trust (MBHT) had been using evening operating lists frequently for Waiting List Initiative (WLI) purposes and was prepared to use WLI resources to fund evening training lists. Patients were selected from the waiting lists of all general surgeons unless it had been indicated that a named consultant should perform the operation. The trainer was a year-4 specialist registrar with an interest in medical education though all lists were performed with a named consultant available to attend promptly if requested. Patients were told that the trainer and trainee would perform the procedure together and that a consultant was available if required. The evaluation had the approval of the Local Research Ethics Committee.

A single SHO attended each list and followed the entire in-patient journey to maximise learning professional, technical and interpersonal skills.¹² This began with a pre-operative visit with the trainer which gave the trainee an opportunity to observe, reflect upon, and then perform under observation pre-operative procedures such as confirming the diagnosis, assuring that consent is fully informed, answering questions and allaying anxiety. Patients, as well as the trainer, fed back to the trainee.

The case-mix of the lists was planned to maximise repetition; three inguinal hernia repairs or three cases of high tie, stripping and avulsions for long saphenous varicose veins. The operative training was styled to the needs of the trainee. Junior trainees initially observed, then continued under guidance. The repetition allowed the trainer to break the procedure into steps so that the trainee could perform each part of the procedure, though maybe not all steps for a single patient. More experienced trainees would be encouraged to talk through each case, reflecting on technique and decision-making, refining performance with repetition. Time between cases was used to discuss topics such as the use of local anaesthesia and electrocautery. Trainees were taught to write thorough operation notes with the guidance of a specifically designed workbook.

After the procedure, trainees visited the patients with the trainer to assess the patients' analgesia and general well-being, to complete paperwork and answer questions. Patients usually stayed overnight and were seen once more by the trainee in the morning before discharge.

Training lists began in November 2002 and took place fortnightly until September 2003. The evaluation was carried out from 1 February 2003 to 31 July 2003. Four trainees took part during this time period.

The initiative was evaluated using the principles of a stakeholder evaluation,¹⁵ attempting to make judgements from the perspectives of the multiple stakeholders. The patients' (cases') experience of the training list was compared with the experience of matched patients (controls)

Table 1 Patient characteristics

	Trainee lists	Consultant lists
M:F	22:19	27:14
Mean age (years)	47	52

treated by consultants in evening WLI sessions. Controls had the same type of operation performed within 4 weeks of each index training case. The difference in costs was used as a proxy of the perspective of the wider community and the value of the programme to the trainees was assessed.

Patients' experience

A validated patient experience questionnaire was used to assess the value patients attached to their overall care. The Picker Patient Questionnaire¹⁴ now forms the basis of national NHS data collection and has been designed to act as a core to which further questions can be added. In order to maintain the validity and reliability of this tool, only two simple questions were added: 'How would you describe the overall experience?' (Good, Acceptable, Poor) and 'Have you been satisfied with the outcome of your operation?' (Yes, Partly, No).

Costs to the community

Costs are not calculated on an exact per patient basis in the NHS and can be estimated in a variety of ways. WLI lists are

Table 2 Financial comparison

Expenses (£)	Trainee list	Consultant list
Surgeon	0	422
Anaesthetist	422	422
Theatre staff	560	560
Theatre consumables/drugs	336	560
Sterilisation	129	215
Medical records	20	33
Facilities' costs (waste, linen, etc.)	31	52
Clerking (doctor or nurse)	91	152
Ward staff	301	501
Ward consumables/drugs	14	23
Secretarial support	28	47
Cost per list	£1932	£2875
Patients per list	3	5
Cost per patient	£644	£575

funded separately from day-time work and the surgical directorate in MBHT is reimbursed by an average anticipated cost comprising fixed costs per list (*e.g.* payments to theatre staff) and fixed costs per patient (*e.g.* linen services, secretarial support). We have used the costs reimbursed to the directorate as our cost estimation.

The trainees' experience

The increase in SHOs' supervised operating experience was assessed by comparing the total procedures performed during this initiative with the number of procedures performed by supervised SHOs on routine, day-time operating lists within the 6-month period.

Results

Forty-three patients attended. Two patients declined to undergo varicose vein surgery for mild varicosities after

discussing the benefits and risks on the day of surgery. One patient had bilateral surgery. The patient groups are compared in Table 1. Forty-two operations were carried out, as detailed in the first column of Table 6.

The Picker Patient Experience Questionnaire, designed to identify patients who felt their needs were either incompletely met or not met at all, was returned by 27 patients (66%) on the trainees' lists, and 35 patients (85%) on the consultants' lists. Percentages of patients identifying a problem in each area are listed in Table 3. A smaller proportion of the trainees' patients identified perceived problems with their care in 11 of the 15 areas addressed by the questionnaire and this is most marked in questions considering adequacy of communication. Tables 4 and 5 show that the two groups' overall satisfaction with their hospital experience and the outcome of their operations are comparable.

Consultant assistance was not requested during any of the training lists.

Table 3 The questionnaire

	Percentage of patients noting a problem with their care	
	Trainees (<i>n</i> = 27)	Consultants (<i>n</i> = 35)
When you had important questions to ask a doctor, did you get an answer you could understand?	11	26
When you had important questions to ask a nurse, did you get an answer you could understand?	7	11
Sometimes, one doctor or nurse will say one thing and another will say something different. Did this happen to you?	19	11
If you had any anxieties or fears about your condition or treatment, did a doctor discuss them with you?	22	29
Did doctors talk in front of you as if you weren't there?	0	3
Did you want to be more involved in the decisions made about your care?	26	31
Overall, did you feel you were treated with respect and dignity whilst you were in hospital?	0	9
If you had any anxieties or fears about your condition or treatment, did a nurse discuss them with you?	15	17
Did you find someone on the hospital staff to talk to about your concerns?	7	29
Do you think the hospital staff did everything they could to control your pain?	11	14
If your family or someone close to you wanted to talk to a doctor, did they have enough opportunity to do so?	22	37
Did the doctors or nurses give your family or someone close to you all the information they needed to help you recover?	22	20
Did a member of staff explain the purpose of the medicines you were to take at home in a way you could understand?	4	9
Did a member of staff tell you about medication side effects to watch for when you went home?	22	20
Did someone tell you about danger signals regarding your illness or treatment to watch for after you went home?	33	29

Table 4 The patients' summary of their experience

	How would you describe the overall experience? (% responders)	
	Trainees' lists (n = 27)	Consultants' lists (n = 35)
Good	81	77
Acceptable	19	14
Poor	0	9

Table 5 The patients' summary of their outcome

	Have you been satisfied with the outcome of your operation? (% responders)	
	Trainees' lists (n = 27)	Consultants' lists (n = 35)
Yes	68	69
Partly	32	23
No	0	8

Table 6 Trainees' training opportunities during the 6-month period

	Cases done by trainees on ring-fenced lists	Cases done by trainees on main lists	Cases done by other surgical staff (all lists)
Inguinal hernia	16	3	115
Para-umbilical hernia	2	0	1
Circumcision	2	3	28
Varicose veins	15	0	47
Zadek's procedure	7	0	14
Total procedures	42	6	205

The breakdown of estimated costs is shown in Table 2. The trainees' lists were 12% more expensive per patient.

Table 6 shows that in addition to the 42 operations performed during our training lists, SHOs were supervised first-surgeons for only 6 other procedures during the 6-month period, missing up to 205 other opportunities.

Discussion

Trainers will need to continually optimise the potential to structure learning within clinical settings; learners will need to recognise that at almost every point during the working day there are learning opportunities to be exploited.

Liberating Learning, Conference of Postgraduate Medical Deans of the United Kingdom 2002.¹²

By organising a series of ring-fenced training lists, a service target (reducing the waiting list) was combined with a high-intensity training experience. The case-mix was ideally suited to these two different objectives.¹⁵ By using the entire in-patient journey as a learning resource, training was offered in a wide range of topics from all three of the domains of learning – knowledge, skills and attitudes. By

deliberately including the postoperative visit in the learning experience, trainees gained immediate practical feedback on their technical abilities (*e.g.* the adequacy of local anaesthetic infiltration) and interpersonal skills (*e.g.* possible miscommunication of pre-operative information). We encouraged reflection throughout.

With limited training time and the erosion of the structured surgical firm, there is an imperative to find new and efficient ways to produce competent surgeons for the future. The programme had the strength of offering individualised teaching with a trainer with specific interests and skills in medical education. This meant that training was very flexible, adapting to each trainee's learning needs regardless of initial levels of skill. Technical abilities are obviously essential to the surgeon in training and rightly are the focus of current concern,¹⁶ but are not enough to educate a well-rounded surgeon. The explicit use of reflection¹⁷ is thought to be one of the best ways to develop professional skills such as communication, self-development and clinical judgement¹⁸ and should be closely coupled with the learning experience, as was achieved during these sessions.

The value and costs of any intervention may be defined in quite different ways by patients, surgeons, public health physicians, accountants or statisticians. The stakeholder

evaluation model¹⁵ recognises this and advocates evaluating interventions from a multistakeholder perspective. The evaluation was based on this principle but recognises that practicalities limit the extent to which it can be attained.

The evaluation of patients' experience could have been more broadly based, including other outcomes such as pain scores/analgesia use and infection rates. Long-term data on technical outcomes such as the need for repeated varicose vein surgery or hernia recurrence would have been interesting, but would have extended the time to report the findings. An independent researcher might have been employed to conduct open or structured interviews with patients and their relatives in order to determine their views, but the assumption was made that significant problems in any of these areas would be represented by problems identified in the questionnaire or lead to overall dissatisfaction. Specific questions about technical outcome, infections, return to work, *etc.* were not asked as these may be difficult for a patient to interpret, difficult to corroborate (*e.g.* postoperative infections appearing after discharge), irrelevant (*e.g.* return to work for retired patients) and 'doctor-centric' rather than 'patient-centric'. In addition, the variety of procedures and small numbers involved made technical comparisons impossible.

The financial calculations have not taken account of any additional occasions on which the patients needed to consult their GP or be seen in the out-patient clinic. Neither has it been possible to make meaningful comparisons with training during ordinary day-time lists due to the multitude of factors influencing day-time costs and the lack of available data. However, there is unlikely to be a major discrepancy between the cost of training lists and routine or WLI provision of the same service that was not identified by the patient satisfaction questionnaire.

Various ways of judging the value of the intervention from the trainees' point of view were considered. The Objective Structured Assessment of Technical Skills (OSATS) as developed by Reznick *et al.*¹⁹ can be used to judge operative skills before and after a training programme but each OSATS is procedure specific. Before use, a new OSATS should be devised (by collaborative consultation with at least 10 experts – personal communication, Reznick, 2003) and, ideally, separately validated. There were no validated OSATS procedures for the cases we used at the time of the study. For this reason, and because it would also have raised insurmountable ethical, technical and manpower issues (due to the need to videotape operations and arrange for expert review of the tapes for OSATS assessment) it was decided not to employ OSATS. In devising competence-based training programmes for the future, the role of OSATS, or an equivalent, will need to be factored in.

The use of qualitative methods such as a focus group and individual interviews to collect information from the

trainees, was considered, but was not pursued as it proved impossible to devise a system to do this in a small unit that guaranteed anonymity to the trainees.

Although the number of cases performed by the trainees does not equate with competence or educational value, it was the most practical option, as used in the form of log-book review in current training assessments including the RITA system.

The questionnaire results show that the trainees' lists were comparable with one important exception. Patients on the consultants' lists raised doctor–patient communication problems more frequently. Patients involved in teaching can benefit from the increased time and attention allocated and by being part of the discussions between trainee and trainer²⁰ and this may have been a factor.

One important issue raised by our results is the almost complete lack of supervised operating at SHO level on the main day-time lists. Clearly, although demands of the on-call rota and ward work compete for an SHO's attention, an individual's time management skills, enthusiasm and determination are crucial in determining how much time and attention they receive in theatre. Responsibility for training lies with both the trainer and the trainee. It would be interesting to examine prospectively the factors preventing SHOs getting to theatre and the factors that prevent them acting as a supervised first-surgeon for appropriate cases when they are in theatre.

This training initiative successfully used a trainer who is not yet a consultant; officially an unconventional practice although the anecdotal experience of many consultant surgeons would testify to the importance of the role of senior trainees in surgical training. Clearly, the attributes of a good trainer depend more on aptitude and training than job title. Consultants are required to train juniors, often having had no training in medical education themselves. Training in medical education is not currently recognised as part of registrar training in the way that research is and this is something which could be addressed in the future.

Conclusions

We have run a programme of dedicated training operating lists that have contributed to the service requirement whilst offering an intensive learning experience for SHOs. The patients' experience was equivalent to that they receive when undergoing surgery on a consultant's list and costs per patient were increased by 12%. Trainees' experience increased by a factor of 700%, a finding which raises important issues about the lack of opportunity for SHOs to operate on normal day-time lists. Ring-fenced operating time for trainees, in conditions where the case-mix is appropriately controlled, can be achieved within existing funding envelopes, and that training can be effectively

delivered by a senior trainee who has been encouraged to develop skills in educational method as well the generic competencies of a doctor and the craft of surgery.

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