

# A Near-Peer Surgical Teaching Programme for Junior Doctors

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## Research Article

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# Abstract

**Background:** Surgical departments across the UK are having to mitigate increasing service demands, budget constraints and changes to work patterns, with their statutory duty to provide high-quality training and education. In an overstretched NHS, securing consultant-led teaching for junior doctors has become increasingly difficult leading to the rise of near-peer teaching. We evaluate the long-term effectiveness of a near-peer surgical teaching programme for junior doctors.

**Methods:** We developed a rolling 12-week trainee-led, didactic surgical education programme for junior doctors and incorporated a three-tiered leadership and handover mechanism involving lead junior doctors, registrars and a lead consultant to ensure consistency and programme continuity. Junior doctors delivered presentations to their peers with close supervision and input from registrars. Participants provided session and supervision feedback using 5-point scales and free-text responses. Data was collected using Google Forms™ and analysed using student's t-test on Microsoft Excel®.

**Results:** 42 junior doctors responded to our end-of-programme feedback surveys covering December 2018 to April 2020. The overall programme ( $8.83 \pm 1.08/10$ ), topic relevance ( $4.62 \pm 0.58/5$ ), presentation quality ( $4.60 \pm 0.50/5$ ) and supervisor knowledge ( $4.81 \pm 0.40/5$ ) were rated highly by respondents. 95.2% ( $n=40$ ) of respondents had attended more than 3 sessions and 71.4 % ( $n=30$ ) had delivered teaching. Respondents also reported significant improvements in subject knowledge ( $3.72 \pm 0.92/5$  to  $4.50 \pm 0.56/5$ ,  $P < 0.0001$ ), clinical confidence, presentation and teaching skills following each session.

**Conclusions:** This long-term near-peer teaching programme addressed the educational needs of junior doctors and developed their presentation and organisational skills. Supervision and input from registrars facilitated discussion and reinforced key concepts. Our strategy also facilitated workplace-based assessments and familiarisation with local management protocols for new cohorts of doctors rotating in Surgery at Basildon University Hospital. We also recently adapted this into a virtual programme in response to the COVID-19 pandemic, maintaining clinical education and expanding our audience. The success of this programme highlights the role that trainees can play in designing, developing and coordinating an effective surgical teaching programme.

## Background

The clinical environment in the UK's National Health Service (NHS) is changing rapidly due to the challenges posed by increasing service demands, staff shortages and budget cuts; with junior doctor training becoming an unfortunate casualty (1). Surgical departments are now having to mitigate service demands with their statutory duty to provide high-quality education and training mandated by the General Medical Council (GMC) and the Joint Committee on Surgical Training (JCST) (2,3).

Doctors are expected to fulfil the roles of a clinician and an educator as reflected in the GMC guidance, and several commentators have expressed concerns that the shift in working patterns and reduced

contact hours may have impacted the quality of training and even affected the experience and competence of new consultants (4–7).

In an overstretched NHS, opportunities for consultant-led teaching on ward rounds or in the operating theatre have become scarcer as the demand for service provision continues to rise. Furthermore, European Working Time Directives (EWTN) that capped the working week to 48 hours, as well as the 2016 NHS junior doctors' contract has resulted in 'firm' to shift-based working practices for compliance (8,9). While this is a welcome improvement to the historical 100-hour working week, shift-based working has reduced the continuity of care for patients and continuity of supervision for junior doctors (4). Surgical teams can change daily, with the consequent reduction in contact hours resulting in trainers being less familiar with individual training needs and the opportunity to develop a mentor-mentee relationship in what has traditionally been a craft-based specialty (10). This has contributed to the difficulty in trainees finding enough time for on-the-job teaching, slowly rendering the adage of '*see one, do one, teach one*' obsolete.

To circumvent these issues, many surgical departments have adopted consultant-led didactic lecture-style teaching sessions with 'bleep-free' protected time for trainees, or informal *ad hoc* bedside teaching. However, as detailed above, service pressures may preclude consultants from providing consistent teaching. Generic teaching provided by Foundation Schools are also often of limited hours and due to clinical duties, Foundation doctors may miss learning opportunities and struggle to meet requirements to pass their Annual Review of Competency Progression (ARCP).

## **Near-peer teaching**

Near-peer teaching is a relatively new teaching strategy where students or junior doctors are taught by peers who are a few years ahead in their training (11). It has emerged as an increasingly popular method to enhance teaching for trainees and reduce a constant dependence on senior clinicians and consultants.

There remains a paucity of articles in the literature evaluating the long-term impact of near-peer teaching programmes. The present study evaluates the impact of a 12-week rolling surgical teaching programme in a District General Hospital which was designed with the input of senior faculty, specialist registrars, Foundation doctors and core surgical trainees over a 16-month period. Junior doctors<sup>[1]</sup> delivered teaching on a broad range of surgical topics with guidance and supervision from surgical registrars or associate specialists.

We hypothesised that this near-peer surgical teaching programme will (a) improve junior doctors' confidence in a broad range of core surgical topics, (b) develop their communication and presentation skills, and (c) demonstrate long-term sustainability as different doctors rotate through the specialty. We also briefly discuss how this programme can be adapted in view of the COVID-19 pandemic.

<sup>[1]</sup> We use the term 'junior doctors' to refer to both Foundation doctors and Core Surgical Trainees

## Methods

### Programme structure and curriculum design

The programme consisted of weekly 1-hour sessions over a rolling 12-week period to cover each 4-month Foundation rotation. Topics were selected by the lead consultant with input from each cohort of registrars and junior doctors and were aimed at covering the management of common surgical presentations (Table 1). The programme was also prominently displayed on weekly rotas disseminated to all surgical wards to emphasise that these were protected and 'bleep-free' teaching sessions.

**Table 1.** List of all topics taught during the 16-month study period. Topics varied between each rotation based on junior doctor input.

Programme topics
Cholecystitis
Pancreatitis
Appendicitis
Peptic ulcer disease and perforation
Bowel obstruction
Oesophageal disease
Inflammatory bowel disease
Colorectal cancer
Diverticular disease
Breast cancer
Limb ischaemia
Lower GI bleed
Abdominal aortic aneurysm
Shock
The unwell surgical patient

All junior doctors at Basildon Hospital were invited to attend but most participants were Foundation doctors rotating in General Surgery, Vascular Surgery or Urology. A surgical registrar or associate

specialist was allocated to supervise each session and facilitate discussion. Teaching sessions followed a small group tutorial format with a single junior doctor giving a slide-based presentation followed by a discussion among participants.

### **Recruitment, organisation and continuity**

Junior doctors were recruited to teach via an online webform which was disseminated by email and were asked to rank their topic and presentation slot preferences prior to the start of their rotations.

Continuity of the programme was ensured through a three-tiered process (Figure 1); the lead consultant overseeing the programme, a lead registrar who coordinated teaching during their 6-8-month rotation and 1 or 2 lead junior doctors who recruited peers and organised individual sessions over their 4-6-month rotations. Lead registrars and junior doctors took part in a structured handover at the end of the rotation with the next group of teaching leads to facilitate a smooth transition.

### **Feedback and data collection**

Online feedback forms were designed using Google Forms and responses were collated on the Google Drive™ platform using a dedicated Google account. Feedback on session content, presenter and supervisor was collected electronically after each session as a surrogate for attendance and anonymised. Separate feedback on the overall programme was also collected and anonymised after each 4-month rotation to monitor and evaluate the programme's efficacy.

We used 5-point scales ranging from 1 (e.g. 'poor' or 'strongly disagree') to 5 (e.g. 'excellent' or 'strongly agree') as well as free-text comments to assess individual session and overall programme metrics.

Individual session feedback forms asked respondents to rate the overall quality, relevance and usefulness of the topic, the presenter and supervisor's knowledge and coverage of the topic and the supervisor's role in facilitating discussion. We also asked respondents to self-assess their knowledge of the topic before and after the presentation. Free-text comments were aimed at providing constructive feedback and suggestions for improvement for the presenter.

End-of-rotation programme feedback forms asked respondents to rate the overall programme using a 10-point scale. A 5-point scale was used to assess the quality and knowledge of presenters and supervisors as a group, the relevance of the surgical teaching curriculum and its impact on their perceived clinical performance. We also asked junior doctors who taught during the programme to rate its impact on their clinical education and professional skills.

Data regarding attendance, venue and interruptions due to clinical duties were also collected in order to continually improve on extrinsic factors affecting quality of the programme. Data was analysed using Microsoft® Excel and the paired t-test was used to calculate statistical significance.

## **Results**

Between March 2019 to April 2020 a total of 42 junior doctors consisting of 34 Foundation Year 1 doctors, 7 Foundation Year 2 doctors and 1 Core Surgical Trainee responded to the end-of-rotation programme feedback survey (Table 2), encompassing Foundation rotations from December 2018 to April 2020.

**Table 2.** End-of-rotation feedback for the programme. Respondents rated these parameters using a 5-point scale ranging from 1 ('poor') to 5 ('excellent'). Results cover a 16-month period from December 2018 to April 2020.

Programme Metric	Score (mean $\pm$ standard deviation)
Relevance	4.62 $\pm$ 0.58
Presentation quality	4.60 $\pm$ 0.50
Supervisor knowledge	4.81 $\pm$ 0.40
Supervisor engagement	4.48 $\pm$ 0.63
Impact on clinical practice	4.36 $\pm$ 0.76

Global feedback on the programme was excellent. Respondents rated the overall programme very highly (8.83/10, SD 1.08) with additional comments stating that it was 'well organised' and 'highly recommended'.

Respondents indicated that the topics were relevant, with comments suggesting that the selected topics were 'useful' and 'very helpful' in their day-to-day clinical practice. Presentation quality, supervisor knowledge and engagement were also highly rated by respondents. 95.2% (n=40) of respondents had attended more than 3 sessions and 71.4 % (n=30) had participated in teaching sessions as well as attended them.

A total of 107 responses were recorded for individual feedback forms during the study period. Overall, respondents rated their knowledge and familiarity with the topic before sessions as 3.72/5, SD 0.92 and 4.50/5, SD 0.56 following each session (P<0.0001).

Of the 30 respondents who had taught at sessions, 93.3% (n=28) agreed that the programme had helped them improve their skills as a clinical educator. 88.1% (n=37) of all respondents agreed it had a positive impact on their perceived clinical performance as a junior doctor.

Additional feedback for the programme showed participants were greatly appreciative of the teaching leads and registrars for their effort and for organising the sessions. Many comments pointed out that this 'boosted their teaching hours' for their e-portfolios, a pre-requisite for successfully passing their ARCPs, and that they were especially valuable as their daily role provided 'minimal learning opportunities'.

## Discussion

The results of our study demonstrate that this programme significantly improved participants' confidence in a broad range of core surgical topics which also translated to day-to-day perceived clinical performance. Presenters and supervisors received excellent feedback, with free-text comments highlighting the importance of the post-presentation discussion in clarifying key concepts, local guidelines or to explore the topic in greater detail. This indicates that our use of small group tutorial-style sessions with a discussion moderated by a surgical registrar or associate specialist was effective in maintaining interest and facilitating group learning. This has also had the collateral effect of raising awareness of local diagnostic and management pathways for newly rotating junior doctors.

Junior doctors who taught during their rotations overwhelmingly reported that the programme improved their skills as a clinical educator which is a core competency of the Foundation Programme (12). Free-text comments from participants also suggested that these sessions augmented their teaching attendance hours, a minimum number of which must be recorded on their e-portfolios to pass their ARCP, indicating that the programme had helped fill potential gaps in the generic Foundation teaching programme.

One of the early challenges of the programme was to maintain teaching quality and secure senior supervision. The use of a three-tiered leadership framework enabled junior doctors and surgical registrars take greater ownership of their clinical education, improved engagement as participants became more invested in supporting their peers and has ensured continuity.

During this programme's 16-month study period, there were four handovers among lead junior doctors, two handovers among lead registrars and one overseeing consultant. The natural overlap in rotations for registrars, core surgical trainees and Foundation doctors has meant that there was always an individual engaged with the project, enabling staggered handovers, protecting continuity of the programme and preventing any sessions from falling through. All 12 sessions have been successfully delivered in each rotation and the programme is still ongoing in webinar format during the COVID-19 crisis.

The use of a Google Drive™ has been instrumental in facilitating an easy and effective handover. This drive included; a list of teaching topics, session registers and sign-up sheets, individual session feedback forms, overall programme feedback forms and certificate templates on completion of teaching sessions. Handover occurs when teaching leads for the next rotation have been identified and ensures that the next 12-week rolling programme can begin on time. We also incorporated a buffer period of 4-5 weeks in the 4-month rotation to account for delays in start times between rotations, bank holidays, clinical emergencies and sickness. This flexibility allowed additional sessions to be organised, if required, before the end of the rotation.

Participant ratings for the programme as well as supervisors and presenters remained consistently high throughout the study period, with 4 different groups of Foundation doctors having now engaged with the programme. This suggests that the use of electronic resources coupled with structured, staggered handovers has helped sustain the programme and maintain its effectiveness.

Several studies have shown that the outcome of near-peer programmes is as effective as consultant- and faculty-led teaching and are potentially more popular among trainees, possibly due to proximity in age and experience (13–17). Designing and participating in such programmes also provides trainees with teaching opportunities, enhances their knowledge of the subject and develops their communication, presentation and leadership skills. This may also have the added benefit of engaging trainees to take a greater interest in the specialty, particularly in the context of Foundation training where doctors have not sub-specialised. In the long term, the formal incorporation of these programmes can also improve overall trainee satisfaction with their rotation. This programme was also highly cost-effective; all participants taught or attended voluntarily, sessions were held at the hospital's main lecture theatre and no additional funding or equipment was required.

We are encouraged by these positive results but are also cognisant of the limitations of this study. Over 70% of respondents had taught during the programme which may have introduced an element of bias in their evaluation of the programme. To reduce bias, we anonymised all feedback and actively encouraged suggestions for improvement which were followed through in successive iterations. Furthermore, our evaluation of post-session clinical knowledge and confidence is based on a subjective self-assessment. The use of pre- and post-session multiple choice questions (MCQs) could be used in future iterations of the programme as an objective measure of participants' knowledge.

### **Adapting the programme for COVID-19**

The COVID-19 pandemic introduced new challenges to the programme including the cancellation of all face-to-face teaching, increased work demands and rota changes resulting in fewer junior doctors in hospital at any given time. We have responded by using an online video conferencing platform to adapt this into a virtual teaching programme using the same teaching structure. We also advertised the programme on social media platforms to make it more accessible to doctors and medical students whose centres did not provide an alternative to face-to-face teaching. Participants now only require an internet connection and a computer or mobile device to access teaching anywhere, and sessions can easily be recorded for future use or for those unable to attend. We have also been able to expand our target audience from junior doctors rotating in the surgical specialties to medical students, interim Foundation Year 1 doctors and junior doctors from other specialties. This virtual platform remains in its infancy and was born out of necessity; future research is needed to compare the efficacy of a virtual approach with the face-to-face small group programme described above.

## **Conclusions**

Our results show that this long-term near-peer teaching programme was an effective, cost-efficient and sustainable medical education strategy which was very well received by multiple cohorts of junior doctors. A structured handover, the use of appropriate electronic resources and senior guidance and supervision were crucial in ensuring the programme's continuity and securing the engagement of all

stakeholders. This programme's format can easily be implemented in other departments and settings and has been adapted into a virtual programme during the COVID-19 crisis.

Near-peer teaching programmes have the potential to augment junior doctors' teaching, leadership and organisational skills, reduce the pressure for consultant-led teaching, fill potential gaps in generic teaching programmes and provide a mechanism for workplace-based assessments with appropriate supervision. In the context of Foundation training which imparts generic education and skills, the inclusion of specialist surgical teaching enhanced junior trainees' understanding of common surgical conditions and may have helped foster greater interest in the specialty. We therefore advocate using near-peer teaching as an adjunct in the education and training of Foundation doctors and Core Surgical Trainees.

## **Abbreviations**

ARCP: Annual Review of Competency Progression

EWTD: European Working Time Directive

GMC: General Medical Council

JCST: Joint Committee on Surgical Training

MCQ: Multiple Choice Question

NHS: National Health Service

SD: Standard deviation

## **Declarations**

### **ETHICS APPROVAL AND CONSENT TO PARTICIPATE**

This study was granted an exemption from requiring ethics approval by the Mid and South Essex NHS Foundation Trust Research and Development Team. Completion of the voluntary feedback survey was considered consent to participate.

### **CONSENT FOR PUBLICATION**

Not applicable.

### **AVAILABILITY OF DATA AND MATERIALS**

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

## COMPETING INTERESTS

The authors declare that they have no competing interests.

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## AUTHORS' CONTRIBUTIONS

SFH, THHT and SH conceived the study and drafted the manuscript. EPL and SSS were major contributors in reviewing and writing the manuscript. All authors read and approved the final manuscript.

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## Figures



**Figure 1**

One-year cycle of the three-tiered leadership of the teaching programme. Gaps illustrate handovers within each tier. The lead consultant overseeing the programme is consistent throughout the year, registrars have 2 handovers and junior doctors typically have 3 handovers. Two tiers of leadership are active at any given time to facilitate continuity throughout the year.

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [NearPeerProgrammeOverallData.xlsx](#)