

ORIGINAL ARTICLE

# Delivering a socially distanced boot camp for core surgical trainees during the COVID-19 pandemic: how we did it

Christine Blane,<sup>a,\*</sup> Louise Merker,<sup>b</sup> Jonathan Mutimer,<sup>c</sup> James Coulston<sup>a</sup> and Richard Bamford<sup>a</sup>

<sup>a</sup>Musgrove Park Hospital, Parkfield Drive, Taunton, TA1 5DA, UK; <sup>b</sup>North Bristol Trust, Southmead Rd, Bristol, BS10 5NB, UK;

<sup>c</sup>Gloucestershire Royal Hospital, Great Western Rd, Gloucester, GL1 3NN, UK

\*Corresponding author at: Musgrove Park Hospital, Parkfield Drive, Taunton, TA1 5DA, UK. Email: [cblane@doctors.org.uk](mailto:cblane@doctors.org.uk)

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## Abstract

**Background:** Boot camps are an important way to ensure trainees have the necessary skills and confidence as they commence a new stage of training. They are an established part of many post-graduate training programmes. The COVID-19 pandemic has led to a significant disruption in post-graduate training, making boot camps an even more important intervention. **Methods:** This retrospective cohort study used anonymous feedback surveys to evaluate the acceptability of a new blended, socially distanced format of boot camp to trainees starting core surgical training in August 2020. Formal ethical approval was not required for this study. **Results:** All 27 new trainees in HEESW Severn School of Surgery attended the boot camp; over 80% participated in all three feedback surveys (22 [81%] completed the feedback for day 1, 23 [85%] for day 2 and 26 [96%] for day 3). Overall feedback was positive; compared with 2019, there was no significant difference in reported readiness to perform as a core trainee, understanding of the role or the benefit gained from meeting other trainees. When asked which boot camp format the trainees preferred, they favoured all attending in one location (4.65) over the current “hub” format (3.74), which was in turn preferable to attending virtually from home (2.39). ( $P < 0.05$ ). **Conclusion:** Although trainees expressed a preference for the previous model in which their entire cohort attended the boot camp together, the blended format was acceptable to trainees and allowed us to provide a boot camp while following social distancing requirements.

**Keywords:** *surgical training; boot camp; blended learning; technology enhanced learning; surgical simulation; COVID-19*

## Introduction

Boot camps have become an established part of many surgical training programmes. Their aim is to ensure trainees have the necessary knowledge, technical and non-technical skills and to boost their confidence as they embark on the next stage of training.<sup>1–4</sup>

The COVID-19 pandemic caused significant disruption to surgical training in all its forms in 2020.<sup>5</sup> Many teaching events were cancelled, trainees have been re-deployed to other specialties and training opportunities in theatre have decreased.<sup>6</sup> In light of these pressures, we felt the core trainees’ need for a dedicated boot camp was even more important this year. To comply with English social distancing guidelines, we had to make significant changes compared with the format from previous years. We used digital technology to create a blended learning boot camp, which combined face-to-face teaching with online learning. This

retrospective paper aims to explore the feedback from the trainees who attended the boot camp in 2020 and to evaluate its effectiveness.

## Methods

### Boot camp structure

Our boot camp consists of 3 days of lecture-based and teaching sessions in small groups, including practical surgical skills teaching. Faculty include consultant surgeons with an interest in education and senior surgical trainees. Topics covered include clinical skills, technical skills training, non-technical skills training, and opportunities to meet key individuals such as training programme directors to discuss the requirements for successfully completing the programme. It is also an opportunity for core trainees across the region to meet as a peer group. The boot camp timetable is shown in Table 1.

**Table 1.** Summarized programme of boot camp 2020

Time	Day 1	Day 2	Day 3
08.00	Registration and welcome	Research opportunities in Severn	Emergency skills for surgery: general surgery
09.00	Meet the training programme directors	Critical appraisal	Emergency skills for surgery: orthopaedic surgery
10.00	ISCP: its use and navigating WBAs	Professionalism and leadership	Emergency skills for surgery: ENT
11.00	Simulation training	Complex decision making	Emergency skills for surgery: vascular
12.00	Association of Surgeons in Training and Royal College of Surgeons	Introduction to laparoscopic box trainer programme	Emergency skills for surgery: urology
13.00	Lunch and meet the faculty	Lunch and meet the faculty	Lunch and meet the faculty
14.00	How to be a successful core trainee	Cognitive approach to operating	Anaesthetics and critical care for surgeons
15.00	Proactive care of older adults undergoing surgery	Basic surgical skills refresher	Emergency skills for surgery: plastics
16.00	Simulated ward round		

ISCP, Intercollegiate Surgical Curriculum Programme; WBA, work-based assessment.

### Changes to facilitate social distancing

Instead of meeting in a central location, this year we trialled a decentralized format with trainees meeting in three “hub” sites. During the first 2 days of the boot camp, trainees were split between the three “hub” sites. A blended model of learning was used; individual lectures were delivered at one hub and broadcast to the other two sites and to those isolating at home via the online platform Zoom. The number of sessions broadcast from each site was broadly equally and faculty were present at each hub. The third day was held approximately 6 weeks later with all the trainees together in a large non-clinical venue that allowed us to be together while maintaining social distancing.

The hub sites were chosen because they had capacity to accommodate the number of trainees while complying with social distancing guidelines; trainees were allocated evenly between them based on their base hospitals. Masks were provided at each site for faculty and trainees. Written instructions regarding adherence to social distancing guidelines and what to do in case of developing coronavirus symptoms were given in advance and repeated verbally each day. Trainees unable to physically attend due to self-isolation or shielding requirements attended virtually via Zoom.

### Evaluation process

Trainees completed online, anonymous feedback questionnaires. All trainees consented to take part in this study and were free to withdraw their consent at any point. The questionnaires were based on surveys used to evaluate previous boot camps and were updated to reflect the 2020 model.

Trainees were asked about the extent to which they felt they benefitted from each individual session, the boot camp as a

whole and the acceptability of the hub model within the context of social distancing guidelines. Feedback was collected using a Likert scale (1, strongly disagree; 5, strongly agree). Reverse wording statements were also included to improve internal validity.

The web-based software Survey Monkey was used to distribute the surveys, which were completed by trainees on their own smart phones, tablets or computers. The results from 2020 were compared with feedback from 2019. Wilcoxon's signed rank test and ANOVA were used to assess statistical difference between the sets of results. In the weeks following the boot camp, two reminder emails were sent.

## Results

All 27 new trainees in HEESW Severn School of Surgery attended the boot camp and attended evenly across the three hub sites. On day 3, four trainees attended via Zoom; their responses were included in the dataset for analysis. Feedback was collected separately for each day; 22 (81%) completed the feedback for day 1, 23 (85%) for day 2 and 26 (96%) for day 3.

Feedback was extremely positive with each session having a median feedback score of 5/5 and a mean score of 4/5 or greater except the session on membership of the Royal College of Surgeons and the Association of Surgeons In Training, which had a median and mean score of 3/5 (Table 2).

Overall trainees perceived a benefit from attending the event in person (4.38). When asked which boot camp format the trainees preferred, they favoured all attending in one location (4.65) over the current “hub” format (3.74), which was

**Table 2.** Summary of feedback on boot camp

Statement	Score <sup>a</sup>	P value when statements compared
If possible I would want all trainees to attend the bootcamp in the same location	4.65	>0.05
I would rather not travel at all and would prefer to attend from home	2.39	
My preference is the current “hub” model	3.74	
Attending in person has been more beneficial than online only would have been	4.38	<0.05
100% online would have been just as good	2.32	
I feel comfortable that I have been able to follow social distancing guidelines	4.69	<0.05
Changes should have been made to allow closer adherence to social distancing guidelines	1.64	
I know who to contact if I develop COVID-19 symptoms	4.76	<0.05
I don't know who to contact if I develop COVID-19 symptoms	1.32	
The digital technology available was sufficient to ensure a good learning experience	3.22	>0.05
The digital technology available was insufficient	2.96	
The use of a web-based communication tool enhanced my learning	2.96	>0.05
The use of a web-based communication tool detracted from my learning	3.13	

<sup>a</sup>1, completely disagree; 5, completely agree.

in turn preferable to attending virtually from home (2.39). These three options were compared using ANOVA and the results were found to be statistically significant ( $P < 0.05$ ). Trainees reported they were able to follow social distancing guidelines during the boot camp (4.69/5) and understood how to report if they developed any COVID-19 symptoms after the event (4.76).

There was no consensus on whether using an online communication platform enhanced or detracted from learning or whether the technology we used was sufficient to ensure a good experience.

### Comparison with 2019 boot camp

When compared with 2019, there was no significant difference in reported readiness to perform as a core trainee, understanding of the role or the benefit gained from meeting other trainees; all these were scored as 4/5. Only one session received feedback that significantly differed from the previous year; its topic was the Annual Review of Competency Process (ARCP) and use of Intercollegiate Surgical Curriculum Programme portfolio (ISCP) (Table 3).

## Discussion

The start of a new training programme can be stressful for trainees.<sup>2</sup> This transition was likely to be even more challenging during a global pandemic. We made the decision to provide a modified face-to-face boot camp because new trainees would derive significant benefits from face-to-face

**Table 3.** Comparison of results between 2019 and 2020

Area of feedback elicited	Score 2019 <sup>a</sup>	Score 2020 <sup>a</sup>	P value
Understanding of the ISCP/ARCP process	4.28	3.96	<0.05
Useful to meet other trainees	4.81	4.81	>0.05
Better understanding of role	4.62	4.53	>0.05
Readiness to be a core trainee	4.73	4.5	>0.05

ARCP, Annual Review of Competence Progression; ISCP, Intercollegiate Surgical Curriculum Programme.

<sup>a</sup>1, completely disagree; 5, completely agree.

interaction that could not be obtained otherwise. There were also practical elements of the course, such as the basic surgical skills sessions, which could not be delivered online.

Blended learning uses online resources to enhance traditional learning formats and has been widely adopted across higher education and has potential to enhance the flexibility and efficiency of learning.<sup>8</sup> By blending traditional face-to-face teaching with online learning, we were able to deliver a socially distanced boot camp.

Overall learner feedback was positive; trainees valued the opportunity to learn alongside their peers. Other studies have highlighted the importance of interactivity in blended learning.<sup>10,11</sup> Reassuringly, this socially distanced “hub” format was acceptable to trainees and preferable to attending a completely virtual boot camp.

When asked specifically about their readiness to perform at this level as a result of the boot camp, the trainees reported levels of confidence similar to trainees from the 2019 boot camp. Based on these findings, we feel that this year's boot camp was as effective as the previous year in preparing the trainees to begin their core training. This experience will be useful as we consider organizing others educational events where learners may not be able to gather in one place, whether this is due to social distancing requirements or other reasons.

From the perspective of the organizer, this "hub" model was significantly more complex to organize, requiring more resources including faculty and digital technology. In addition, there were some areas of the boot camp that were less effective. Feedback was mixed about the use of the online communication tool and other digital equipment. Part of the reason for these findings may have been unfamiliarity with the technology on the part of the faculty. Technical difficulties have been identified by many learners as a significant barrier to online learning.<sup>9,10</sup> As blended format takes a larger role in education, we may need to invest in more resources and ensure faculty are more familiar with their use.

### Study limitations

Although the use of an online questionnaire allowed for rapid data collection, this method of obtaining feedback has inherent limitations. The questionnaire included quantitative data only to allow accurate comparison of data from sequential boot camps. It would be interesting to conduct qualitative research to explore trainee perceptions in more detail.

### Conclusion

Our study has demonstrated that the amendments made to a core surgical training boot camp enabled us to deliver an educational event that was not inferior to those from previous years despite the challenges posed by the COVID-19 pandemic. Although vaccination programmes are underway in many countries, it appears likely that future training events will need to consider social distancing for the foreseeable future. These findings are encouraging to educators and support the development of a blended learning approach to surgical training.

### Conflict of interest

The authors have no disclosures or conflicts of interest to declare.

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