

# Remote training for combat medics during the COVID-19 era: lessons learnt for future crises?

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## ABSTRACT

**Background** In response to COVID-19, the UK government ordered strict social distancing measures. The UK Armed Forces followed these to protect the force and ensure readiness to respond to various tasking requests. Clinical training has adapted to ensure geographically dispersed medical personnel are trained while social distancing is maintained. This study aimed to evaluate remote training for Combat Medical Technicians, Medical Assistants and Royal Air Force Medics (CMTs/MAs/RAFMs) during the COVID-19 pandemic and the views of trainers on how this should be delivered now and in the future.

**Methods** A mixed quantitative and qualitative survey study was conducted to determine the experiences of a sample of Defence Medical Services personnel with remote training during the COVID-19 pandemic. Medical and nursing officers involved in teaching CMTs/MAs/RAFMs were eligible to participate.

**Results** There were 52 survey respondents. 78% delivered remote training to CMTs/MAs/RAFMs, predominantly using teleconferencing and small-group webinars. 70% of respondents report CMTs/MAs/RAFMs received more training during the COVID-19 pandemic than before. 94% of respondents felt webinar-based remote training should continue after COVID-19. The perceived benefits of webinar-based training included reduced travel time, more training continuity and greater clinical development of learners.

**Conclusions** The challenge of continuing education of medical personnel while maintaining readiness for deployment and adhering to the Government's social distancing measures was perceived to have been met within our study sample. This suggests that such an approach, along with clear training objectives and teleconferencing, may enable personnel to deliver high-quality training in an innovative and secure way.

## INTRODUCTION

On 30 January 2020, the WHO declared COVID-19 a global emergency.<sup>1</sup> On 23 March 2020, the UK government ordered social distancing measures to control COVID-19.<sup>2</sup> The UK military followed these measures to protect the force and maintain readiness to respond to the many diverse tasks undertaken globally. Clinical teaching for Combat Medical Technicians, Medical Assistants and Royal Air Force Medics (CMTs/MAs/RAFMs) has continued to prepare them to treat COVID-19 and maintain clinical knowledge. Whereas clinical training is typically delivered face to face, there has been a need to remotely teach geographically dispersed service personnel during the pandemic.

## Key messages

- Combat Medical Technicians, Medical Assistants and Royal Air Force Medics (CMTs/MAs/RAFMs) received more training during the COVID-19 pandemic than beforehand.
- Defence Medical Services clinical trainers have delivered remote training to CMTs/MAs/RAFMs using teleconferencing platform-based small-group webinars, and felt that this should continue beyond the current pandemic.
- Perceived benefits of webinar-based training include reduced travel time, continuity of teaching and greater professional and clinical development of learners.
- The prioritisation and protecting of clinical training time by commanders may improve the professional development of CMTs/MAs/RAFMs.

Our forebears highlighted the need to adapt clinical training for crises during World War I.<sup>3</sup> Over 100 years later, the WHO created an eLearning package that allowed training during the COVID-19 pandemic.<sup>4</sup> Evidence shows that eLearning can enhance education, overcome geographic isolation and be as effective as other training methods.<sup>5–7</sup> eLearning can be limited by poor information technology,<sup>8</sup> therefore having a reliable platform for remote learning is paramount.

The aim of the current study was to evaluate the views of a sample of those who trained CMTs/MAs/RAFMs during the pandemic. Data obtained may help the Defence Medical Services (DMS) set the conditions for higher quality and more efficient training in the future.

## METHODS

### Study design

A mixed quantitative and qualitative survey study was conducted to determine the experiences of a sample of DMS personnel with remote learning during the COVID-19 pandemic. No ethical approval was required according to the Health Research Authority decision tool.<sup>9</sup>

### Study participants

Medical and nursing officers within the DMS involved with teaching CMTs/MAs/RAFMs were invited to participate. A bespoke online questionnaire was designed and distributed by the investigators using Google Docs (Google, Mountain View, California, USA).<sup>10</sup> Online supplementary material 1 lists the survey questions. A hyperlink to the



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survey was distributed to all medical officers within the current cohort of triservice General Duties Medical Officers (GDMO) and Senior Medical Officers (SMO) of British Army Medical Regiments. SMOs circulated the survey to doctors and nurses involved in teaching. Follow-up email and telephone reminders were used to reach the most responses. The survey was open between 20 and 23 April 2020.

### Data collection

Data were collected on demographics; teaching prepandemic; teaching during the pandemic; current medical training syllabus; assessment and feedback; and lessons to improve future training. Feedback was collected from the CMTs/MAs/RAFMs as part of their teaching. No identifiable data were collected, and data fields related exclusively to teaching practice and respondent opinions. No operational or sensitive information was collected.

### Data analysis

Quantitative data are summarised as means and SD for normally distributed continuous data, and medians and IQR for non-normally distributed continuous data. Categorical data are summarised using n and %. Qualitative data are collated into themes.

## RESULTS

### Study participants

Fifty of 52 respondents consented for their responses to be used for this study. There were 33 male respondents. Mean age was 29 (range 25–47, SD 4.5). Mean years as a military registered clinician were 3.9 (median 3.5, range 1–19, IQR 2–5). Forty-six of 50 (92%) respondents were GDMOs, predominantly located in UK medical regiments, with a small number deployed. The remainder were SMOs 2/50 (4%) and nurses 2/50 (4%). Forty-four of 50 (88%) respondents were from the British Army, with 4/50 (8%) from the Royal Navy and 2/50 (4%) from the Royal Air Force.

### Prepandemic clinical teaching

Before the COVID-19 pandemic, 35/50 (70%) respondents were involved with teaching CMTs/MAs/RAFMs (Figure 1). Some reported that training programmes lacked structure and one commented that training *'seemingly jumped from one topic to*

*the next... with no progression'*. Teaching methods commonly included lectures, skill sessions, simulation and tutorials. No respondents reported delivering any remote teaching online before COVID-19.

### Frequency and duration of sessions during COVID-19

Thirty-nine of 50 (78%) respondents were delivering clinical training during the COVID-19 pandemic. Of those, 28/41 (68%) delivered remote training only, 11/41 (27%) both remotely and in person and 2/41 (5%) in person only. Thirty-one of 44 (70%) respondents stated that the CMTs/MAs/RAFMs they work with are receiving more training now than before COVID-19 (Figure 1).

### Training techniques

Of the 39/50 (78%) respondents who are providing remote training, teleconference platforms predominantly included Skype (Skype Technologies, Palo Alto, California, USA) 22/39 (56%) and Zoom (Zoom Video Communications, San Jose, California, USA) 23/39 (59%). One of 39 (3%) respondents were teaching using a telephone, and 1/39 (3%) respondents were using Defence Connect, a secure online military platform that enables file sharing. Thirty-four of 41 (83%) respondents were training CMTs/MAs/RAFMs with online webinars and tutorials. Some study participants stated that training should be via webinar because *'webinars seem to be the most engaging... use small groups... and maintain social distancing'*. Ninety-four per cent of respondents felt that webinar-based remote training should continue after the COVID-19 pandemic.

### Session design

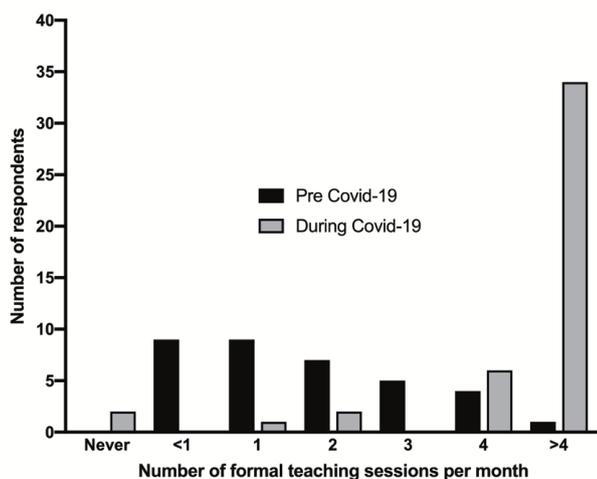
Respondents were asked what they needed from commanders to enable them to deliver high-quality remote teaching. Some respondents stated that *'clear direction'* on the syllabus would improve their training's value. Another common theme was a request for the CMTs/MAs/RAFMs to have regular protected time for *'delivery of training without interruption'*. Moreover, respondents commented time should be allocated for *'medics to consolidate teaching'*.

Several respondents suggested that clinicians currently create their own teaching material, which brings duplication of work, and increases error potential. They suggested that commanders and SMOs should set the conditions to enable their teams to provide remote training. This could be achieved by providing a central secure online resource bank, such as Defence Connect by SMOs, Training Wings or the Surgeon General's staff. This would facilitate the development of a centrally assured training programme compendium, if considered desirable. This resource bank would need to be accessible from individually owned technology and MODNet terminals. A secure platform such as Defence Connect that is usable from home and military establishments should be designated, and *'a funded [teleconferencing] account should be provided if required'*.

Delivering essential in-person training during COVID-19 needs to adhere to strict social distancing. Respondents suggested that small-group sessions in large venues represent a solution for this. For skills which require training to be completed in close proximity, personnel should use personal protective equipment in line with government policy.

### Syllabus and teaching material

Sixty-five per cent of respondents reported that the training syllabus was written by a GDMO, with 29% stating that they



**Figure 1** Number of formal teaching sessions delivered to military medics before and during the COVID-19 social distancing measures.

were not training to a syllabus. Responses were divided on who should define the syllabus. Some respondents advocated for unit chains of command and SMOs being best able to judge the likely tasks of their units and create a bespoke syllabus. Others felt that a standardised syllabus encompassing the knowledge and skills required of CMTs/MAs/RAFMs in COVID-19 facilities would add value. Finally, a group of respondents highlighted the existing CMTs/MAs/RAFMs portfolio and validation criteria as guides to training programmes.

### Assessment

Twenty-one of 47 (45%) respondents are using formative assessment, 8/47 (17%) were using summative assessment and 23/47 (49%) were not assessing. The assessment took the form of verbal questions within sessions and online testing on Testmoz (Washington State University, Vancouver, Washington, USA), Google Forms (Google) and SurveyMonkey (One Curiosity Way, San Mateo, California, USA) platforms. Twenty of 40 (50%) respondents are communicating assessment scores with their learner's chain of command.

### Feedback from trainees

Overall, there was positive feedback from CMTs/MAs/RAFMs. One commented that *'it stimulated me and many topics were explored in greater detail than they had previously been taught'*. Generally, learners were grouped with the same tutor throughout, developing rapport—an aspect associated with success.<sup>11</sup> One CMT stated, *'this is the most clinical training I've had in two years,'* while another commented, *'the lessons taught have all been relevant and useful in helping me become a better medic. It has helped me expand my knowledge.'*

### DISCUSSION

To our knowledge, we present the first investigation of the techniques of CMTs/MAs/RAFMs teaching within the UK DMS during the COVID-19 pandemic. Our main findings are that teaching frequency has increased, and that novel techniques are being used with perceived good effect. These findings suggest that the challenge of continuing education of personnel while maintaining readiness for deployment and adhering to social distancing has been perceived by our

study sample to have been met. This has been achieved by the clinical teacher's adaptability and resolved in the face of an unprecedented crisis.

Due to the rapidly evolving nature of COVID-19, the commanders gave their intent to train troops to be *'ready for clinical work relating to COVID-19... as quickly as possible'*. This then gave GDMOs *Mission Command* to design training to fulfil this intent and adapt their training programme to their learners. Mission Command represents a leadership style which could be used to great effect in crises, especially regarding teaching.<sup>12</sup>

Although we present some advantages of COVID-era remote training, some clinical training of CMTs/MAs/RAFMs will always need to be delivered face to face, such as clinical skills and examination, and simulation training. However, many teaching topics may be better suited to remote teaching. Table 1 summarises the pros and cons of remote learning.

The majority of our study sample (92%) perceived a role for more online training after the current pandemic. However, it may be unrealistic to expect the desired three to five sessions a week when the normal tempo of taskings resumes. Some respondents felt that most theoretical clinical training could be delivered by a mix of prerecorded lectures stored online, and live online tutorials enabling tailored interactive teaching. Training should be guided by the military medic training programme and portfolio with specific additions to address future challenges such as the *'Military Medic to Ward'* concept during COVID-19. Views should be sought from learners to ensure training needs are met.

Assessments should only take place in a structured fashion, and be either formative (to assess learning needs) or summative (to confirm progress against a defined standard).<sup>13</sup> Feedback from trainers should be used in a constructive manner to build students' confidence, highlight areas for improvement and of excellence, and it should also encourage self-reflection and motivate individuals to address their weaknesses.<sup>14</sup>

Online learning has been growing for 30 years in several fields.<sup>15</sup> The UK Armed Forces use online learning routinely for career courses and continuous professional development. These commonly take the form of *'click-through'* eLearning or prerecorded lectures. Live webinars have been acceptable to health-care professionals for continuous professional development.<sup>16</sup> Responses to our survey suggest that this form of training has

**Table 1** Pros and cons of remote learning techniques for combat medical technicians, medical assistants and Royal Air Force Medic education

| Topics                 | Pros  | Cons   |
|------------------------|---|--|
| Logistical factors     | <ul style="list-style-type: none"> <li>▶ Social distancing maintained</li> <li>▶ Reduced time used travelling to deliver/receive training</li> <li>▶ Reduced travel cost burden to unit</li> <li>▶ Reduced environmental impact of unnecessary travel</li> <li>▶ Fewer challenges with audiovisual equipment</li> <li>▶ Fewer administrative hurdles, for example, room bookings</li> </ul>                         | <ul style="list-style-type: none"> <li>▶ Not suited to teaching all elements of clinical care, for example, practical skills</li> <li>▶ Reliant on individuals having their own personal electronic devices and strong internet connection</li> </ul>              |
| Continuity of training | <ul style="list-style-type: none"> <li>▶ Deployed CMTs/MAs/RAFMs can be involved in clinical training</li> <li>▶ Reduced impact of essential unit work on clinical training that can be caught up on or attended remotely</li> <li>▶ Trainers are able to teach more frequently and build relationships and rapport with learners allowing tailoring of lessons to their needs</li> </ul>                           | <ul style="list-style-type: none"> <li>▶ May be harder to spot non-verbal cues that a learner needs more support</li> </ul>  |
| Training value         | <ul style="list-style-type: none"> <li>▶ Better trainer to learner ratios possible as more trainers can engage with training</li> <li>▶ Learners may more readily ask questions on webinar than in full lecture theatre</li> <li>▶ Diverse electronic resources such as quizzes may be used</li> <li>▶ Prerecorded webinars can be studied at a time and pace suited to work schedule and learning needs</li> </ul> | <ul style="list-style-type: none"> <li>▶ May be harder to engage distractible learners using teleconferencing</li> <li>▶ More difficult for senior clinicians to validate training if several sessions happening at once via teleconferencing platforms</li> </ul> |

CMTs/MAs/RAFMs, Combat Medical Technicians, Medical Assistants and Royal Air Force Medics.

been well received during the pandemic and has achieved good educational outcomes.

Medical education research has examined how the degree of structure and interaction levels influence student satisfaction with the educational experience. Online courses with low levels of structure and high levels of interaction have been associated with high student satisfaction and good educational outcomes.<sup>17</sup> Equipping students and their tutors with clear and realistic goals, and capitalising on available technology will enable effective remote teaching in the future.<sup>18</sup> The ability of the military clinical trainer to adjust sessions to the learning needs of their regular group during COVID-19 was a prominent theme.

### Limitations

The current study used a survey and is therefore at risk of selection bias towards those with stronger opinions. There is an overall majority of British Army GDMO respondents, with fewer responses from other services. The majority of study respondents were doctors, but it is known that training is delivered to CMTs/MAs/RAFMs by a large and diverse group. Our sample may not represent teaching delivered by non-clinicians.

### CONCLUSION

During the current COVID-19 pandemic, our anonymous survey of those training CMTs/MAs/RAFMs suggests that training was delivered effectively despite unprecedented challenges. A variety of techniques including teleconferencing and online assessment platforms have been in use. Web-based teaching may be implemented for the training of CMTs/MAs/RAFMs after COVID-19 and in future crises. Combining online and in-person training may have synergistic benefits. Our study highlights the benefits of remote training for CMTs/MAs/RAFMs and GDMOs, which may also provide training opportunities for all clinicians within the DMS, both at home and deployed.

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**Contributors** JMH and HAC designed the methodology with some modifications by DNN. The study was undertaken by JMH and HAC. Data analysis was undertaken by JMH and HAC. Data interpretation was done by all authors. The first draft of the manuscript was written by JMH and HAC, and revisions were made by DNN. The final version was agreed by all authors.

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