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Digital communication platforms in cardiothoracic surgery during COVID-19 pandemic: keeping us connected or isolated?

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Abstract

During the COVID-19 pandemic, performing a surgeon's duties has become challenging while adhering to social distancing mandates. To aid in the continuity of healthcare services, rapid implementation of digital communication tools became a necessity. This is an account of experiences using digital communication platforms, namely Microsoft Teams and Zoom, for clinical and educative purposes in the field of Cardiothoracic Surgery in the UK. While enabling ongoing virtual clinical meetings, conferences and learning opportunities for residents with little face-to-face contact, are these digital communication platforms keeping us connected or isolated?

Keywords: COVID-19 • Pandemic • Cardiothoracic Surgery • Education • Digital Communication Platforms

The SARS-CoV-2 (COVID-19) virus has unexpectedly reduced healthcare services including outpatient clinics, diagnostic services and elective surgeries [1]. In these exceptional circumstances with little in-person contact allowed and social distancing mandates, performing surgeons' duties has become challenging. To aid in the continuity of healthcare services, rapid implementation of digital communication tools became a necessity. While occupied in large-scale management of a previously unknown virus, the seamless incorporation of such tools in healthcare, was not only appropriate but beneficial.

The following is an account of the experiences using digital communication platforms, namely Microsoft Teams (MST) and Zoom, for clinical and educative purposes in the field of Cardiothoracic Surgery in the UK.

To assist healthcare workers in the COVID-19 outbreak, NHS Digital rapidly provided free access to MST, ensuring secure data protection and monitoring within the NHS Secure Boundary [2]. Available for computers and mobiles, MST allows hosting virtual meetings involving screen-sharing of content to its audience, ideal for local and regional Multidisciplinary Decision Team (MDT). Large audiences can join MDTs from different specialties and hospitals while still adhering to UK guidelines for social distancing.

A virtual MDT has the key advantage of having patient records, investigations results and imaging easily shared with colleagues for detailed discussions and informed decision-making [3]. In cardiac surgery, the regular Joint Cardiology-Cardiac surgery

meetings often involve reviewing coronary angiograms and echocardiography images for patients' interventions plan. Similarly, in thoracic surgery, computed tomography and positron emission tomography scan images are reviewed in detail during lung cancer MDTs. MST ensures every audience member views such imaging accurately on their own screen and surgeons can make informed decisions on surgical planning. A virtual MDTs survey reported that 91.7% of the audience found viewing images and histological samples to be equal or better virtually [4].

Virtual MDTs eliminates geographic barriers and commute times between departments and hospitals. This is beneficial in cardiothoracic surgery where travelling time saved from regional MDTs would allow more time for reviewing patients and complex cases. Trainees are often unable to attend physical MDTs due to other clinical duties, but the convenience of accessing virtual MDTs provides learning opportunities to listen in on clinical discussions and images review. In a recent survey, 83.3% reported that virtual MDTs provide the same standard of care as face-to-face MDTs, all reported that continuity of care was equal or better, and two-thirds supported their use even after the pandemic [4].

Whilst virtual MDTs might be an effective temporary solution during a pandemic, some clinicians might still prefer face-to-face meetings if given the choice. In-person communication is perceived as 'building stronger relationships', 'encourages more robust conversation' and allows 'detection of non-verbal cues' [4]. In addition, virtual MDTs may suffer from greater external

distractions and require high-speed internet for content streaming, which is not always available. However, in a pre-pandemic survey, 93% of MDT attendees reported the necessity of technology for improved investigations access, live data recording and decision-making [5]. Other domains to improve in-person MDTs included more allocated time and better attendance [5]. Virtual MDTs may aim to address these shortcomings while improving inter-professional connectivity.

Lastly, another hesitancy for adopting virtual MDTs relates to data protection and security. To ensure security compliances, there are a number of safeguards in place with the Data Protection Act 2018 and General Data Protection Regulation including data and email encryption, triple password protection, secure remote access 'tokens' and limitation of the types of data stored [6]. MST enforces end-to-end encryption with team-wide and organization-wide 2-factor authentication, single sign-on through Active Directory, encryption of data in transit and at rest to ensure its safety and secure real-time transport protocol technology for audio and video data [7]. Patient data are protected by complying to strict adherence to the organizations Information Governance Policies and Procedures so that if identifiable data need to be transferred it would require the use of approved encrypted emails to do so (such as nhs.net or equivalent). During the pandemic, MST has been protected and monitored by the NHS Secure Boundary, ensuring secure use for patient data [2].

The experience from a traditional face-to-face teaching is incomparable to one delivered on the digital platform. However, during the pandemic, academic and clinical teaching rapidly transitioned to online platforms. Multidisciplinary teaching programmes have been developed and delivered using virtual platforms from small group interactive session to large lectures, with overwhelming positive feedback from learners and teachers [8]. One study showed >95% of learners found the accessibility of teaching in their own time on MST was useful and improved staff morale [8]. Furthermore, the overwhelming majority of the presenters (95%) for these teaching programmes also felt MST as an effective platform for teaching and would use it again for future sessions (84%), due to advantages including the possibility of remote access and wider reach of the teaching programme [8].

During the pandemic, the rapid adoption of virtual meetings did not stop the academic activities despite restrictions of face-to-face meetings. With the exception of lab-based research, many research activities such as project discussions, manuscript writing, grants applications can be carried out in person but also via online platforms [3]. Thus, researchers have been able to continue to benefit from academic meetings and maintain research productivity. An important function of such platforms includes the integration of collaborative document creation and editing between team members in real time. Teams have been able to convene virtually and allow ongoing projects and task completions [3]. In addition to local and regional cardiothoracic surgery education programmes, new opportunities to experience high-quality teaching from global experts allow ongoing dissemination of knowledge and even networking [9].

Key advantages include free/inexpensive teaching, as virtual learning removes costs of venue hire, travelling and time. It further provides opportunities to watch recorded sessions if unable to attend the live session. However, the obvious downfalls are the clinical distractions that are absent during in-person teaching. Furthermore, this has proved challenging for speakers whose teaching style involves active audience engagement.

Online platforms have proved useful for delivering international conferences such as the 34th EACTS Annual Meeting 2020 to provide continuity of research dissemination. Numerous administrative personnel and pre-recorded presentations with live Q&A helped avoiding technical delays. The significantly reduced costs for travel and expenses from virtual conferences would attract more delegates including trainees, to experience high-quality research. The EACTS Academy has also continued providing virtual excellent training courses such as the 'Fundamentals in Cardiac Surgery' and 'Thoracic Surgery series' with many more scheduled in the future [10].

COVID-19 pandemic has stimulated the adoption of digital platforms in healthcare settings and has proved overall effective. Despite the convenience for virtual lecture-based education, they cannot replace the hands-on experience that surgical trainees require and gain during wet lab and practical teachings. Clinically, surgeons continue making key operative decisions during virtual MDTs. Nevertheless, despite the pandemic bringing us together to fight against a common pathogen, have these digital platforms further distanced us with less human interactions and interpersonal skills, that are core for our profession?

As the pandemic subsides and social distancing protocols ease, it is anticipated that future clinical meetings and educational programmes will be a hybrid of both face-to-face and online components to maximize the benefits of each. For example, the 35th EACTS Annual Meeting 2021 is piloted this approach with 2 different registrations, offering high-level events to as many delegates worldwide. Post-pandemic, maintaining both in-person and virtual options for meetings and courses attendances might be beneficial to fulfil the participants' preferences. Some clinicians have become accustomed to participate in meetings virtually to accommodate busy schedules while others prefer the human interactions that only a face-to-face meeting can offer. In the field of cardiothoracic surgery, both are equally important: virtual accessibility to MDTs and conferences have allowed larger audiences to participate, which is a crucial improvement that residents have benefitted from; while in-person meetings are required to continue nurture the symbiotic relationships that cardiac and thoracic surgeons have with cardiologists, intensivists, physicians and other specialties.

Qualitative studies including analysis of staff perceptions are clearly required to understand the impact and role of digital platforms after the pandemic. Further studies are also required to elicit any differences on training and patient outcomes when conducting meetings or teaching sessions virtually compared to in-person. With better staff training, enhanced data security and continuous software improvements, it is likely that digital platforms are to remain.

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Reviewer information

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