Guidance on the introduction and use of video consultations during COVID-19: important lessons from qualitative research

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ABSTRACT

Background Following several years of qualitative research, we have developed evidence-based guidance on setting up and conducting remote video consultations. Drawing on emerging evidence, we have also adapted the guidance to ensure accessibility and relevance for those using video calling during and beyond the COVID-19 pandemic.

Findings This article describes the research underpinning this guidance material, with a focus on three key areas: (1) IT infrastructure, (2) organisational routines and workflows, and (3) interactional work of a video consultation. Our research highlights that such change is not merely about installing and using new technology. It involves introducing and sustaining major changes to a complex system with multiple interacting components.

Conclusion If remote video consultations are to be adopted at scale, implementation will need to follow a socio-technical approach, continually adjusting the technology and work processes to become better aligned.

INTRODUCTION

With a view to containing novel coronavirus (COVID-19), healthcare organisations around the world are rapidly introducing new service models, which avoid direct clinician–patient contact. The shift from in-person to remote consulting—which, at the time of writing, has only just begun—is logistical and cultural as well as technical. Indeed, it may be the fastest and most extensive scale-up of a major service innovation in the UK National Health Service since it was established in 1948. Clinicians are thus faced with a new disease, a new way of interacting with patients and new pathways and workflows. These are challenging times.

There has been growing interest in the use of video as a method of consultation between clinician and patient over the last 10 years, and randomised controlled trials (RCTs) have shown such consultations to be acceptable, safe and effective in selected patients.[1–7] However, while this service model has been shown to be successful within small-scale pilot projects, the uptake of video consultations in the National Health Service (NHS), as in healthcare organisations in many other countries, has been slow. One reason for this is that video consultations fundamentally change the nature of clinical care. The change includes the need to develop new ways of organising clinical and administrative work and train and support both staff and patients in technology use.[8]

Our qualitative research on video consultations has been conducted primarily within hospital outpatient care settings across a range of clinical conditions, including diabetes, cancer and heart failure. Our ethnographic studies on the introduction of this new service within routine clinical practice has illuminated the importance of a system-wide approach to implementation, involving national and local strategic leads.[8–14] Successful introduction and scale-up seemed to depend on the presence of innovators (people who were keen on new products and new ways of working), champions (people who believed in an innovation and sought to persuade others of its benefits) and change agents (people who had the skills, time and personal qualities to drive through the change and recruit others to help). Through this work, we have met a number of very charismatic leaders and managers (both clinical and non-clinical) who have been able to drive a quality improvement and human-centred approach to change, sharing power and using their personal qualities and skills to engage, mobilise and support others.

Video is now playing an increasingly important role in providing patients with access to healthcare, either for those with COVID-19 symptoms or with other conditions. In many cases, patients suspected of COVID-19 present with mild symptoms and are mainly seeking advice and reassurance, which can often be provided by telephone. However, video may be more appropriate for sicker patients, more anxious ones and those with comorbidities, as it would provide additional visual information, diagnostic clues and therapeutic presence. See Greenhalgh *et al*[15] for further guidance on remote assessments of patients presenting COVID-19.

Guided by the findings from our qualitative research, and in collaboration with practitioners and patients, we have developed guidance on setting up and running video consultations during the COVID-19 pandemic and beyond (https://bjgplife.com/2020/03/18/video-consultations-guide-for-practice/) and have produced guiding resources and materials in partnership with Barts Health NHS Trust (https://www.phc.ox.ac.uk/research/resources/video-consulting-in-the-nhs). These resources are available for services to adapt and use (some key documents are also included as online supplementary materials). In the following sections, we describe the empirical research underpinning this guidance and provide recommendations for those leading such change within their service.

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HEALTH IT INFRASTRUCTURE

Infrastructure has been defined as something other things 'run on'.[16] It consists of hardware and software and buildings, wires, connections, clinical records, charts, standards and other aspects that make an information system work. A defining characteristic of infrastructure is its transparency (invisible, taken for granted and ready to hand), and so often it is not considered within health technology projects until it breaks down or gets in the way. Health IT systems are also patchworked and path- dependent, in which components emerge incrementally and so cannot be installed or replaced wholescale.[17]

Repeatedly, implementation and spread of video consultations become stalled or distorted due to problems interfacing the new technology with local legacy systems and standards. Our ethnographic fieldwork pre-COVID-19 showed that the process of implementing video consultations was best undertaken incrementally, involving close collaborations with IT support teams to coadapt technical arrangement and configurations alongside work processes.[10] This principle is likely to hold even in the very different circumstances of the COVID-19 pandemic, in which, of necessity, change is happening at great pace and scale. In the guidance, we emphasise the need to form links with local IT support teams from the start and maintain ongoing dialogue. This will help users as they grapple with the new technology within their work environment, establish infrastructural capabilities and limitations and explore scope for adaptation and improvement. Additional staff capacity for installation and manning IT helpdesks will help prevent a bottleneck at the set-up stage.

It is also important to attend to the materiality or design of the video technology platform. Not all platforms offer the same functionality, so it is worth exploring before deciding. We recommend prioritising basic dependability over advanced functionality and viewing the technology not as a stand-alone plug-in but as something that will be an integral part of a wider administrative and clinical workflow.

Various applications originally developed for the purpose of video conferencing (eg, Zoom, Microsoft Teams and Skype for Business) or casual social interaction (eg, Skype, WhatsApp and FaceTime) could potentially be used for remote consultations. Consumer software packages tend to be free to download or available through organisational licences. However, many of these platforms were originally designed for a different purpose and may align poorly with clinical workflows. They may also require software downloads and the creation of user accounts, which add further complexity and may breach information governance policies, though many restrictions have been temporarily relaxed in the public interest.

A number of second-generation products are now available that were designed specifically for medical consultations, including Attend Anywhere (widely used in Scotland) and AccuRx (probably the leading provider in England). A list of video software providers approved by NHS Digital at the start of the COVID-19 pandemic is available at https://digital.nhs.uk/services/future-gp-it-systems-and-services/approved-econsultation-systems. The emergence of bespoke products designed for remote video consultations (as opposed to video *conferencing*) may be easier to use in practice, as these tend to be designed to mirror and align with clinic workflows and information governance requirements. For example, they may include a 'virtual waiting area' to help manage and coordinate the flow of patients attending their virtual appointments and avoid the need for patients to download new software.[18]

Additionally, it is important to attend to how the platform interfaces with other aspects of the system (eg, internet browsers and firewalls) and ensure good and dependable internet connection. When technical connection is high-quality, clinicians and patients tend to communicate in much the same way as in a face-to-face consultation. High-quality peripherals, such as microphone, cameras and speakers will also play an important role in enhancing the call.

Minor technical breakdowns (eg, difficulty establishing an audio connection or temporary freezing of the picture) tend not to cause major disruption to the clinical interaction, as they are typically easy to resolve. However, it can be potentially prohibitive when patients (or staff) are not sufficiently skilled or confident to undertake the necessary 'troubleshooting'. It is important to expect such problems. Build capacity within the team through testing and piloting the technology, establish contingency plans for when the technology fails and establish reliable communication links with technical support staff to mobilise support when needed.[10]

The quality of the consultation will also depend on the technical setup at the patient's end. Different approaches and levels of support will be needed for different patients. For many patients, video consulting will be a welcome and positive alternative to physically attending the clinic. However, for some, particularly those with low technical literacy and/or limited access to technology or internet, it will be unfamiliar and a potential barrier to healthcare. During this significant and rapid reorganisation of the healthcare system to deal with COVID-19, efforts should be made to ensure that those who cannot or choose not to consult by video have another option. It is likely that clinical and non-clinical staff will be involved in helping some patients to use and familiarise themselves with the technology. These new roles and responsibilities will require the whole team to communicate and collaborate, with attention paid to the overall 'organising vision' (clear and consistent vision among stakeholders as to what will be achieved)[19] within which the change is framed.

ORGANISATIONAL ROUTINES AND WORKFLOWS

'Organisational routines' are defined as 'recognisable, repetitive patterns of interdependent action carried out by multiple actors'.[20] They are also situated within a sociomaterial context; in that, actions are structured around time, physical spaces, material and technological artefacts.[21]

Routines help reduce uncertainty, support complex collaborative working and maintain 'mutual awareness' of distributed roles and actions. Outpatient workflows are complex and structured around various interacting routines—for example, booking appointments, arranging prior tests, processing patients to and through an outpatient clinic, and following up (eg, arranging a repeat appointment and sending a letter to the General Practitioner (GP)). Routines tend to be interdependent with other routines, and if one routine changes, it can generate additional work in other routines and processes. Video consultation services often fail not because of the video technology itself but because of the considerable work involved in aligning the administrative routines to accommodate the virtual appointment.

In observing routines for video consultations in different outpatient clinics, we identified subtle, but important, aspects of the clinic workflow that need to be taken into consideration. In particular, the physical presence of the patient often forms an important part of how routines are structured to support collaborative clinical work. For instance, when the patient walks into the building, they typically approach a reception area, and this is

what prompts them to be checked in by the receptionist on the clinic administration system. This triggers the informing of the clinic team of the patient's arrival (and the patient can be seen sitting in the waiting area); they can be called into the consultation room when the practitioner is ready. Accommodating the *virtual* presence of the patient would require changes to these interconnecting roles, processes and routines (and is achieved more easily if there is an actual virtual waiting room).[8]

The extent to which such routines need to be reoriented for virtual consultations, and how this reorientation is managed by staff, will depend on local contextual factors. However, there are key areas that service teams need to consider. First, the introduction of video will require the reconfiguration of patient administration systems, so that appointment scheduling templates can distinguish between different appointment types (ie, telephone, video and face to face); these different types need to be separately coded on the patient's record. Second, communication templates to patients (eg, letters, texts and emails) need to be reconfigured with the information needed to access the virtual appointment (eg, web links). Third, teams should think carefully about the patient's point of entry into the virtual consultation and how this will be managed by the teams (eg, managing patient flow if the clinic is running late, recording attendance, decisions and outcomes).

COVID-19 has brought further challenges to the restructuring of these workflows, as health organisations implement new protocols to minimise the spread of infection. In England, primary care services have been mandated to completely restructure local referral processes, using the NHS 111 as a first port of call for many patients and following new triage processes to prioritise those at risk and identify whether they need to be assessed in person.[22] Having to align the use of remote video consulting with these overlapping routines will be especially challenging, particularly as they cause significant change and disruption to well-established routines and may cross organisational boundaries.

When setting up a video consultation service, close attention should be paid to the clinic workflow and how these relate to multiple interacting routines. Successful alignment involves an active process of mutual adaptation in which people's roles and interactions are adjusted to accommodate the new technology and vice versa.

CONSULTING WITH PATIENTS THROUGH VIDEO

A large body of research, most of which has been done in hospital outpatient settings, suggests that video consultations are broadly safe for low-risk patients, including routine follow-up of chronic, stable conditions, especially when the main purpose of the consultation is to convey test results and affirm that the patient remains asymptomatic.[1–7] Clinicians have generally considered it clinically inappropriate and unsafe to use remote consultations for poorly defined and less predictable conditions and rare conditions.[8] The current situation with COVID-19, a highly contagious and potentially deadly disease, has altered the risk-benefit balance dramatically, and video consultations are now recommended for many (though not all) acutely unwell and unstable patients.[15]

When the technology is working well, a video consultation is very similar to a face-to-face consultation. However, there are subtle ways in which the technology can alter the dynamic between the patient and clinician, and so additional interactional work will be needed.[13] Box 1 lists different types of talk involved in supporting a remote video consultation.

Our analysis of clinician–patient interaction during video consultations, highlighted the 'opening' to be an important part of the consultation because this is when both patient and clinician establish whether the video and/or audio connection is adequate before proceeding with the consultation.[14] Patients should be invited to confirm that they can see and hear clearly, and consideration should be given to the setup of peripheral equipment to optimise the quality of the interaction (eg, positioning the webcam in the centre of the computer screen to enhance sense of engagement and eye contact). Greetings and rapport building also plays an important role in putting the patient at ease at the start of a video-mediated consultation, given that more conventional forms of prosocial interaction and contact during face-to-face medical encounters (eg, shaking hands and inviting into the consultation room) are absent.

Box 1 Different types of talk to support video consultations

Setting up: checking that the video/audio is working well and instructing the patient to help improve quality if needed (eg, unmuting the microphone and switching on the video camera).

Social talk: non-clinical talk to support rapport building and putting the patient at ease, including greetings and providing reassurance.

Clinical talk: information related to the patient's condition/illness, treatment and management. Summarise the key points at the end of consultation to check key information had been clearly communicated.

Repair talk: correcting significant disruption to the flow of the consultation due to latency or technical breakdowns (eg, pausing and inviting the patient to continue talking when overlap/interruption occurs).

Operational talk: instructing and guiding the patient to support the consultation. This may include requests to improve the quality of the consultation (eg, asking the patient to speak louder and reposition the webcam) or during physical examinations (eg, position the camera or change the lighting to get a better view).

Both clinicians and patients will need to deal with the problem of latency (time delay in transmission from one end of the call to the other) during video consultations. Although short periods of latency (up to around 200 ms) have little or no effect on the interaction, more significant latency (around 500 ms and above) can interfere with the conversational flow, resulting in overlap and interruptions.[14] It is important, therefore, to be aware of the potential effects of latency on turn-taking and allow more time for patients to respond to questions.

Similarly, conversation flow can become disrupted by breakdowns or degradation in video and/or audio quality and so may require asking patients to repeat themselves. Loss of audio may also have significant implications for quality and safety, for instance, when communicating symptoms or medication dosage. Therefore, the clinician should be careful to summarise key points at the end of the consultation and ask if the patient needs anything repeated or clarified. When managing a patient who may have COVID-19, safety-netting advice should be carefully explained and a record made that this was done; there may be a patient information leaflet or web link that can be sent as an email attachment.[15]

While it is impossible to conduct direct physical examinations by video, a limited examination can sometimes be undertaken, supplemented by readings if the patient has the necessary monitoring equipment (eg, blood pressure monitor). However, conducting physical examinations is not a straightforward replacement of in-clinic examination. The challenges will depend on the clinical condition, the patient's knowledge of their illness and the patient's and clinician's ability to collaborate and

communicate effectively. It may require rethinking what information is needed as part of the examination and if certain aspects of the assessment could be adapted. More will be achieved in the remote physical examination if clinicians can explain which part of the patient's body they are seeking to look at and explaining how they might adjust the light and position their device to get the best view.[13]

Our research has shown that there is a learning curve before people become confident in using this new medium for clinical encounters, realising its possibilities (and limitations) and findings ways to account for the physical and symbolic differences in the technology-supported environment. It is likely that this rapid rollout of video consultations during the COVID-19 pandemic will have long-term effects on the perceptions and use of remote consulting. With this in mind, it is important that practitioners harness and share knowledge on effective approaches through communities of practice, produce rules of thumb on what is generally safe and engage with professional bodies and defence societies (nursing as well as medical) to develop contemporary definitions of good clinical practice.

SUMMARY AND RECOMMENDATIONS

Social distancing during the COVID-19 outbreak has meant unprecedented challenges to healthcare systems, including the scaling-up of video consultations. However, research has shown that the implementation process for this service model can be difficult and resource intensive, with multiple challenges in relation to workability and integration of the service model in routine clinical practice.

Leading such change will require a sociotechnical systems approach, embedding the service model through mutual configuration of technological systems, clinical and administrative routines. Attention should be paid to technological infrastructure, ensuring adequate resourcing for equipment and a review of how different video platforms relate to work practices. Collaboration across multiple organisational actors is essential for restructuring work practices and managing unintended consequences. It is important to promote a clear and positive narrative about the technology and ways to monitor the effects of the change in a timely way. There should be plenty of time for capacity building and sharing best practice, as well as discussion with staff and patients about how these changes affect their service. Finally, it requires leaders to proactively engage with local and national decision makers to influence and align developments with the various commissioning and regulatory structures that impact implementation on the ground.

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