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Review

Human factors recognition at virtual meetings and video conferencing: how to get the best performance from yourself and others

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Abstract

During the current coronavirus pandemic, social distancing and restrictions on travel have resulted in a dramatic rise in the use of technology (including video conferencing) for remote meetings. From local multidisciplinary team (MDT) meetings to national and international committees, this form of communication has been vital to ensure patient-related and other business can continue, albeit in a sometimes unfamiliar environment. In this article we consider some of the human factors elements of remote meetings and provide suggestions to enhance the experience of team and committee members during this unsettling time. It is possible that this form of communication will continue to flourish after the pandemic is over.
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Introduction

In just a few months, the coronavirus (COVID-19) pandemic has changed our current way of life both personally and professionally. Social distancing regulations across the world are proving beneficial in reducing the spread of the virus.[1] However, this necessary alteration to the way we interact has resulted in the cancellation and postponement of many national meetings, conferences (including the BAOMS Annual Scientific Meeting in June 2020), surgical exams including MRCS and FRCS as well as other events involving close interaction between colleagues. However, national and international business and essential meetings requiring significant participation at local Trust level, such as cancer and other multidisciplinary teams (MDT) have to continue.

As a result, there has been an exponential rise in the use of virtual meeting technology including such platforms as Microsoft® Teams, GoToMeeting®, PowWowNow® to name just a few. When confidential conversations are taking place such as those relating to patient care, it is important to ensure that the platform being used is secure.

The use of video-communication is not new and has considerable benefits for connecting individuals in diverse locations, reducing travel time and expense. Over 25 years ago, researchers investigated various factors that improve one's presence on teleconferencing including how cameras are set up and positioned to ensure eye contact with other participants.[2]

However, limited bandwidth can result in major shortcomings, frustration, reduced performance and less effective action planning when compared to standard face to face meetings.[3] Speaking time also increases during virtual meetings[3] and various non-verbal communication gestures

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that occur during face to face meetings might be difficult or impossible to convey to others thereby reducing decision making quality.[4] The authors have attended and chaired many virtual meetings in the last few weeks. Our experiences have been variable, encountering many issues supporting the findings of a 2013 study that concluded virtual technology was unlikely to replace the traditional face-to-face cancer MDT.[5] Broadband and login issues, long arduous meetings, and difficulties in agreeing outcomes that are more readily achievable in face-to-face meetings prompted review of human factors (HF) knowledge and experiences to develop suggestions to improve the virtual experience.

Before discussing these issues, it is important to emphasise that adequate preparation is a prerequisite to any committee or meeting and members should have read the relevant circulated papers and agenda before the meeting itself.

What human factors are important at virtual meetings?

Setting the agenda

Some meetings may be conducted by video technology, or if not available, by teleconference. Video links can utilise significant bandwidth,[6] leading to connectivity issues, slurring of images and sound problems, all of which can result in potential boredom or disengagement.

It is important that the chair or leader of the meeting begins by setting a clear agenda and format, discusses timings and ensures that everyone is equally valued.[7] It must be emphasised that only one participant should speak at any time. As with face-to face meetings, one or more loquacious individuals may dominate virtual meetings, which can be counterproductive or even disruptive for the rest of the attendees. While all individuals must be allowed to appropriately voice their opinion or expertise, the chair should provide clarity from the outset of the time constraints and need for brevity as well as inclusivity.

When using video conferencing, we recommend that all attendees other than the chair and current speaking participant turn off their cameras to reduce bandwidth usage and improve sound quality. The additional advantage of this technique is that it can alert the chair when someone else wishes to speak, akin to the raising of a hand during a face-to-face meeting.

Taking breaks

While not relevant for short meetings of perhaps less than 90 minutes, during those lasting for a half day or longer, we believe it is important to build in breaks within the virtual meeting agenda. It can be even more difficult to concentrate when participating in remote discussions compared to face-to-face interactions, particularly for the chair who is denied non-verbal communication clues and other committee dynamics that can help the effective running of meetings.

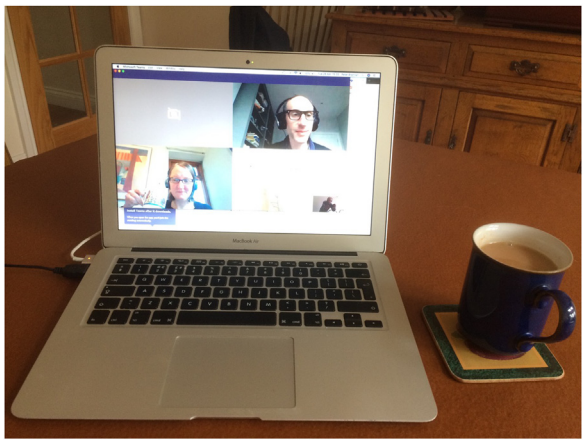

Fig. 1. A cup of coffee or other beverage to provide adequate hydration is important during both virtual and face-to-face meetings.

Lack of concentration can lead to agenda items being missed, or improperly understood and discussed in a similar way to loss of situational awareness leading to potential error.[8] Furthermore, it is much harder for committee members to look out for each other or prompt the chair if they are missing something important or going off track. We recommend a minimum 10-minute break every 90 minutes, with a longer break of at least 20 minutes after three hours. Participants can remain logged in or connected to the hosting platform or dial in number. During this time, just as in clinical practice, it is important to rehydrate and eat regularly.[9] A cup of coffee and comfort break may make longer virtual meetings more enjoyable than shorter but more intense face-to-face meeting where breaks and drinks are considered unnecessary (Fig. 1).

Distraction and multitasking

We are exposed to potential distractions throughout the day. These can be readily classified as external, for example originating from other meeting members and/or the environment, and internal, namely actions or thoughts from ourselves. One distraction can readily lead to another. For example, a perceived dominant committee member or discussion that is seemingly taking too long or heading off at a tangent can lead individuals to focus their attention on smart phones or other non-meeting related tasks.

Smartphones themselves have many potential "distractions" including games, short message services (SMS) or interaction with others through social media. By using a smartphone simultaneously with another task, performance is undoubtedly reduced.[10] While simply using a phone during a virtual meeting might not be as disruptive as during a face-to-face interaction, it could easily result in missing important discussion points.[11,12] When using a computer for a virtual meeting, it is all too easy to divert ones attention to other work-related matters or the internet. Some have recommended placing a mirror close to the computer[13] so the

attendee can observe and maintain awareness of their own behaviour even though the camera is switched off so other members cannot see them.

Having a printed copy of the agenda to hand can be useful both to track progess and provide a wandering mind with a visual cue to keep their attention focused.

Interruptions including noise

Repeated interruptions (including smart phone related) while concentrating on other tasks raises the risk of medical errors.[14] Repeated interruptions such as urgent emails to respond to, or staff members at work and family members at home seeking attention while engaged with a virtual meeting can lead to annoyance with the virtual meeting and a situation termed 'crisis mode work climate.'[15,16] Low levels of background noise can reduce performance and concentration.[17] For this reason we recommend the use of headset when attending videoconferencing. Another potential advantage of a headset is as a reminder of the aviation industry where HF is embedded in practice and becomes second nature. It is also recommended that the microphone function on the computer is set to mute to reduce background noise during virtual meetings, and only switched on when speaking.

Team Building, Authority Gradient & Group Think

Group dynamics can often be challenging, especially where authority, experience or seniority gradients exist. The Chair can manage this by setting the tone at the outset and reinforcing through regularly seeking contributions from other members.

Group think occurs when members would rather concur than cause disharmony, and perhaps coupled with boredom or desire to progress could risk a less than optimum comment to an agenda item. One effective means to counter this is for the chair to seek contradictory opinion/evidence, especially from members who have not led the debate.

Review

This is a powerful tool to ensure that the aims of the session have been achieved (this may contrast with the agenda items) and to summarise key findings. It also offers a closing opportunity for any further contributions.

Similarly a review of how well the session has worked, and any suggested improvements might also prove helpful (Table 1).

Table 1
Some recommendations for improving the virtual meeting experience.

Adequate preparation beforehand
Setting the agenda and timings
Note taker if possible projecting on a virtual white board
One person only to speak at a time
Judicious use of camera to reduce bandwidth
Muting of microphone when not speaking
Familiarity with technical platform
Use of a headset
Taking regular breaks (5-10 minutes every 90 minutes) as for face-to-face meetings
Adequate hydration and nutrition
Ensure a diversity of opinion has been represented in debate
A physical copy of the agenda to hand to track progress
Check the aims of the session have actually been achieved rather than the agenda simply followed
Reflect on the session for future enhancement

Conclusion

At this unsettling time, the use of alternate methods allowing important virtual meetings to continue from local to international level has dramatically increased. It is likely that when some sort of normality returns following the pandemic, many will continue with these arrangements, which can offer convenience, flexibility and savings in both time and travel expenses when compared with traditional face-to-face meetings. Virtual meetings are used to assess progress and provide support at some medical schools as well as aiding education.[18,19] It is difficult to predict the future application of this resource. Consideration and understanding of the relevance and application of human factors to virtual meetings will enable individuals and teams to improve their experience while optimising meeting efficiency and effectiveness.

Conflict of interest

We have no conflicts of interest.

Ethics statement/confirmation of patients' permission

Not applicable.

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