Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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My Thoughts / My Surgical Practice

Online morbidity and mortality conference: Here to stay or a temporary response to COVID-19?

The COVID-19 pandemic upended healthcare delivery and necessitated unprecedented dexterity among departments and healthcare staff.[1–6] Elective surgical cases were postponed, and residency programs were restructured as surgical trainees were deployed to caring for COVID-19 patients. Safe distancing requirements uprooted traditional department activities, such as resident teaching, grand rounds and morbidity and mortality conference (MMC). Faced with such profound disruptions to surgical education, residency programs responded by rethinking their educational programs.[7]

In accordance with required safe distancing regulations, routine proceedings such as MMCs were shifted to a remote platform. To assess the effectiveness, perception, and relative value of remotely conducting MMC via video conference, we completed a brief survey of 54 general surgery residents at two Boston academic institutions, as well as semi-structured interviews with 20 attending surgeons.

The survey consisted of 12 questions structured as multiple-choice items, open responses, or as statements with a 5-point Likert response scale (Supplement 1). After an exemption was obtained by our Institutional Board Review, the anonymous survey was electronically distributed using an internet-based survey tool (SurveyMonkey®) between 5/17/20 and 6/7/20. Interviews via phone calls or emails were also conducted non-anonymously with attending surgeons from the participating institutions.

Resident perspectives

A total of 22 general surgery residents completed the survey, corresponding to a survey response rate of 40.7% (22/54). Residents who responded represented all 5 years of training (5 first-year, 4 second-year, 3 third-year, 5 fourth-year, 4 fifth year, and 1 unspecified). Both female (28.6%) and male residents (71.4%) participated.

The majority of residents (54.6%) reported attending 76%–90% of the traditional, in-person MMCs prior to the COVID-19 pandemic. However, this increased to 90.9% of residents who attended 76–90% of MMC when redesigned to a video-conference format.

In addition, resident respondents were asked to identify the advantages and disadvantages of both the traditional, in-person format of MMC, as well as a revised video-conference format (Table 1). With regard to the traditional, in-person format, three common advantages were identified: more interactive discussions and greater participant engagement; facilitation of in-person connections and fostering community within department; and public speaking practice. Meanwhile, the following disadvantages were reported by residents: inability to attend MMC during off-site rotations or when post-call; formal structure and overall format fosters undue stress for residents; room constraints (i.e., seating) and disruptions; inconsistent and poor faculty attendance; and provoking defensive discussions.

Consistently, the advantages of a video-conference format for MMC included ease of attendance and improved attendance for residents and faculty; less formal structure; nurturing educational environment and reduced stress for presenters; more productive and improvement-driven discussions; and real-time review of case and literature. Commonly identified disadvantages included: technical and audiovisual difficulties; reduced interactions among residents and between residents and faculty; less vibrant and in-depth discussions after resident presentations; and decreased practice public-speaking.

When comparing the in-person and video-conference format of MMC, residents reported that the two formats were about the same with regard to most measures and objectives (Fig. 1). However, the respondents did report some critical differences. Almost half of residents (45.5%) reported that the faculty contribution and faculty attendance were worse for the in-person format relative to the video conference format. In addition, more than one-third of residents reported that the use of audiovisual aids (40.9%), supporting openness, less defensiveness (36.4%) and resident attendance (36.4%) were worse for the in-person format relative to video conference.

While 27.3% of residents recommend returning to the traditional, in-person format of MMC in the post-pandemic phase, nearly three-fourth (72.7%) recommend a hybrid option, allowing for both traditional and video-conference formats.

Attending surgeon perspectives

An interview participation rate of 70% (14/20) was achieved. According to the interviewed faculty, some advantages of MMC via video-conference include greater flexibility to participate; ability to reach a wider audience (especially off-site residents and attending surgeons); opportunity for people in the audience to multitask; ability to use chat function to allow for greater audience participation; and less defensive and blaming discussions. However, attending surgeons report that the traditional, in-person MMC format allows for more comprehensive discussions, better retention of teaching points and is less prone to distractions and technical issues. Furthermore, the traditional format maintains the ability of residents and faculty to interact socially and collegially. When asked to state their preferred format of MMC for the post-

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Table 1
Advantages and disadvantages of in-person and video MMC.

Advantages of in-person MMC (28 responses from 21 respondents)	Number of responses
More interactive discussions and greater participant engagement	17
Facilitates in-person connections & fosters community within department	4
Public-speaking practice	3
Enriches teaching of residents and medical students	1
Formal structure	1
Historic significance and tradition	1
Avoidance of audiovisual and other technical problems	1
Disadvantages of in-person MMC (21 responses from 21 respondents)	
Unable to attend during off-site rotations or when post-call	9
Formal structure and overall format fosters undue stress	6
Room constraints (i.e., seating) and intermittent disruptions	3
Inconsistent and poor faculty attendance	2
In-person format provokes defensive discussions	1
Advantages of video conference MMC (34 responses from 20 respondents)	
Ease of attendance and improved attendance for residents and faculty	22
Less formal structure	4
More nurturing educational environment and reduced stress for presenters	3
More productive and improvement-driven discussions	3
Permits real-time review of patient information and online literature	2
Disadvantages of video conference MMC (23 responses from 21 respondents)	
Technical and audiovisual difficulties	9
Reduced interactions among residents and between residents and faculty	5
Less vibrant and in-depth discussions after resident presentations	4
Decreased practice public-speaking and presenting clinical data	3
Less formal structure	2

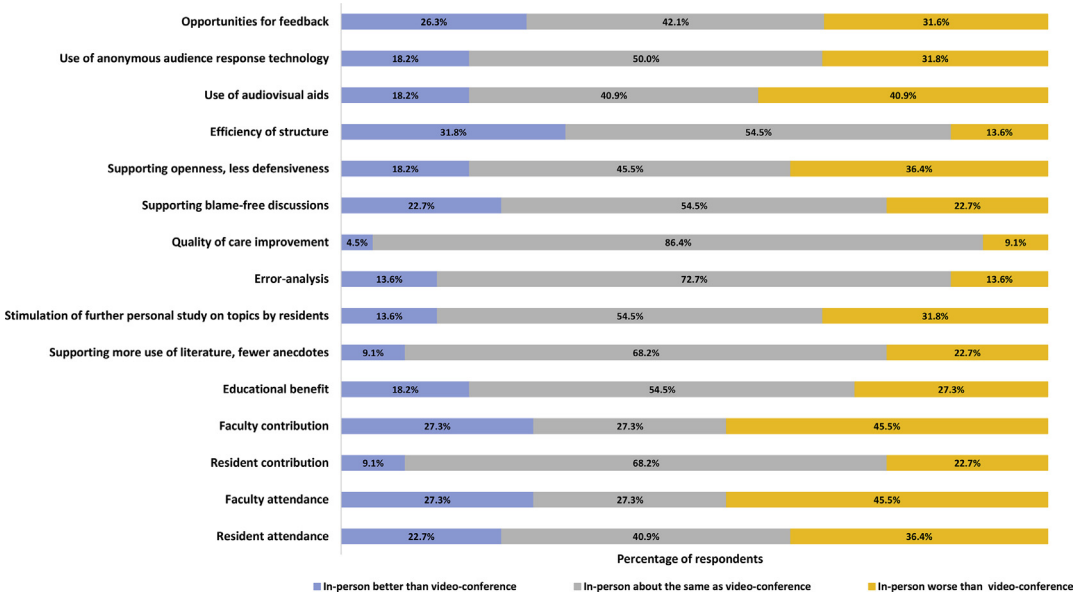

Fig. 1. In-person MMC format relative to video MMC format: comparison of principal outcome measures and objectives.

pandemic era, nearly all faculty (92.9%) recommend a hybrid option that allows both in-person presence and remote participation via video conference.

Importantly, this study was performed relatively early in the COVID-19 pandemic, and our evaluation of remote MMC coincided with the widespread implementation and adoption of video-based communication within hospitals and health systems. Accordingly, one might anticipate a learning curve related to the technical execution and quality of remote conferences. Indeed, prior review of initiatives at single institutions have shown that the video conference is effective in conducting remote educational and clinical activities. In particular, video-conference has been shown to be beneficial for delivering grand rounds, didactic seminars and other educational activities for residents and trainees rotating at multiple sites.[8,9] Video-conference has also been effectively leveraged to facilitate the review of outcomes and indications for patient transfers from rural emergency departments to tertiary medical centers.[10] Consistent with global trends in business, education and other industries, remote and online platforms have proven to be an effective tool in bridging entities, fostering connectivity and expanding capabilities.

With practice, faculty moderators are likely to enrich participant engagement and facilitate more effective discussions, thereby addressing this major limitation. In comparing the two formats, residents reported that a remote format added educational benefit, as it facilitated more effective use of audiovisual aids and graphics, greater integration of clinical evidence, ease of further personal study of clinical objectives and less defensive discussions. However, further studies are necessary to objectively measure the educational impact of the transition to the online MMC.

With greater exposure and adjustment to remote MMC, one would anticipate the identified limitations would be overcome, permitting further appreciation of the added educational benefit of the remote platform.

The present study has several limitations. First, the sample size in our study is small. Although the number of our survey participants is similar to other studies on education of surgical residents, interviewing a larger group of residents and faculty across a number of residency programs would improve the generalizability of our findings. Second, with only 22 of 54 residents participating in our survey (40.7% response rate) we cannot account for the perspectives of the residents who did not participate in our survey. Furthermore, there are gender differences in the participation to this survey because the number of female respondents is significantly smaller than the overall number of the female residents in the participating institutions. Although we believe that the responses collected are representative of all residents that received the survey, we cannot exclude significant differences between respondents and non-respondents. In addition, our study only compared perceptions of the traditional, in-person format versus the remote, video conference. We did not evaluate a hybrid format and thus, cannot assess its effectiveness or reception. Third, the anonymous nature of our survey prevented us from tracking results back to individual residency programs to perform useful comparisons of MMC experience between the two residency programs.

Overall, our study shows that while the COVID-19 pandemic has created unprecedented challenges for the education of surgical residents, it has also stimulated the development of adaptive approaches, including the transitioning of the MMC from in-person to video conference. Reflecting on what can be learned going forward, our findings illustrate that general surgery residents and their faculty consider that a combination of in-person and video-conference formats could increase the impact of the MMC on resident training, continuing medical education for attending surgeons, and quality assurance. Further study of the optimal design of a hybrid format is needed to inform decision-making.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.amjsurg.2021.05.006.

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Brendin R. Beaulieu-Jones[a,b], Katherine He[a,c], Naomi Sell[d], Edward Whang[a,c], Gentian Kristo[a,c,*]

[a] *Department of Surgery, Veterans Affairs Boston Healthcare System, Boston, MA, USA*

[b] *Department of Surgery, Boston Medical Center, Boston University, Boston, MA, USA*

[c] *Department of Surgery, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA*

[d] *Department of Surgery, Massachusetts General Hospital, Harvard Medical School, Boston, MA, USA*

[*] Corresponding author. Department of Surgery, Veterans Affairs Boston Healthcare System, (112-C) 1400 VFW Parkway, West Roxbury, MA, 02132, USA.
E-mail address: gentian.kristo@va.gov (G. Kristo).

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