



Ad astra per aspera (Through Hardships to the Stars): Lessons Learned from the First National Virtual APDS Meeting, 2020

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Ad astra per aspera (Through Hardships to the Stars): Lessons Learned from the First National Virtual APDS Meeting, 2020

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OBJECTIVE: After COVID-19 rendered in-person meetings for national societies impossible in the spring of 2020, the leadership of the Association of Program Directors in Surgery (APDS) innovated via a virtual format in order to hold its national meeting.

DESIGN: APDS leadership pre-emptively considered factors that would be important to attendees including cost, value, time, professional commitments, education, sharing of relevant and current information, and networking.

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ACGME Competencies: Practice-Based Learning and Improvement, Systems-Based Practice, Professionalism, Interpersonal and Communication Skills

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SETTING: The meeting was conducted using a variety of virtual formats including a web portal for entry, pre-recorded poster and oral presentations on the APDS website, interactive panels via a web conferencing platform, and livestreaming.

PARTICIPANTS: There were 298 registrants for the national meeting of the APDS, and 59 participants in the New Program Directors Workshop. The registrants and participants comprised medical students, residents, associate program directors, program directors, and others involved in surgical education nationally.

RESULTS: There was no significant difference detected for high levels of participant satisfaction between 2019 and 2020 for the following items: overall program rating, topics and content meeting stated objectives, relevant content to educational needs, educational format conducive to learning, and agreement that the program will

improve competence, performance, communication skills, patient outcomes, or processes of care/healthcare system performance.

CONCLUSIONS: A virtual format for a national society meeting can provide education, engagement, and community, and the lessons learned by the APDS in the process can be used by other societies for utilization and further improvement. (J Surg Ed 77:1465–1472. © 2020 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: virtual meeting, national meeting, web conferencing, virtual education, program director, surgical education

COMPETENCIES: Professionalism, Interpersonal and Communication Skills, Practice-Based Learning and Improvement, Systems-Based Practice

INTRODUCTION

The Association of Program Directors in Surgery (APDS) was established in 1977 with a mission to further surgical education.¹ Since that time, the vision of the organization has evolved but its purposes have remained the same. The APDS has held bi-annual membership meetings since 1979. A primary organizational meeting occurs each spring and a smaller secondary meeting occurs in the fall in conjunction with the American College of Surgeons (ACS) Clinical Congress. The 2020 APDS spring meeting was scheduled in Seattle, Washington from April 28th to May 2nd with 2 major components—the New Program Directors Workshop (NPDW) and the Annual Meeting of the APDS. Planning commenced in the Spring of 2019 with monthly Program Committee meetings, and a call for abstracts was issued in July 2019 with a deadline of November 11, 2019. Final schedules were posted to www.apds.org and circulated in January 2020 (Table 1 and Table 2), at which time registration was opened.

In February 2020, it became clear to the APDS leadership that an in-person meeting in Seattle was threatened secondary to COVID-19. As institutions across the country started to initiate travel bans, the APDS considered 4 options: cancel the meeting completely, postpone the meeting, hold a hybrid meeting with both onsite and virtual components, or transition to a completely virtual format.

The APDS executive committee felt that the ultimate purpose of and need for the meeting still existed, perhaps now more than ever. Given the challenges of the current environment and its impact on surgical residency training and thus surgical residency leadership, the national meeting was a necessity to fulfill the mission

of the APDS including supporting program directors and advancing the science of surgical education.

The fast pace of COVID-19 in Seattle made the decision much easier. On February 29, the first known death from COVID-19 was reported in the state of Washington. On March 3, Seattle's mayor issued a civil emergency,² and on March 6, the number of confirmed COVID-19 cases in Washington topped 100.^{3,4} On March 11, 2020, Washington's governor prohibited all gatherings over 250 in King, Snohomish, and Pierce counties, and this prohibition was expanded statewide on March 13.⁵

This progression of events in Washington but also nationwide enabled the “force majeure” clause of the contract with the onsite venue, and APDS was released from all contractual obligations just over 36 days prior to the meeting. The APDS Executive Committee and Officers, Board of Directors, and Program Committee initiated a plan to hold the 2020 meeting in a completely virtual format. Just over 30 days prior to the first day of the in-person meeting, the in-person meeting was officially canceled, and the virtual meeting was announced shortly thereafter.

The APDS leadership proactively considered the following elements in order to design a successful virtual program:

1 Cost and Value to Participants

While the ultimate cost to member institutions and their educators would be considerably less without travel and lodging, the educational and social value presented by the virtual meeting for the individual attendee would need to be maintained.

The original meeting was to be held on a Tuesday through Saturday (NPDW on Tuesday and Wednesday and the APDS meeting Thursday through Saturday). The organizers considered that most registrants would have simultaneous home and professional obligations. The decision was made to condense the program in order to allow for a variety of circumstances and maximal time at home with family in these uncertain times. Saturday programming was eliminated.

2 New Program Directors Workshop

The organizers recognized that this particular educational content, essential training for new program directors on how to lead a residency program, was time-sensitive to newly appointed program directors, whose responsibilities would not be postponed secondary to COVID-19 and thus needed to be prioritized. Leaders of the NPDW pivoted to redesign this essential virtual meeting.

3 Location and Time Zones of Participants and Registrants

TABLE 1. Comparison of Schedules and Content for the New Program Directors Workshop (NPDW), Planned 2020 In-Person and Final 2020 Virtual Programs.

2020 Planned In-Person Meeting: TWO DAYS		2020 Actual Virtual Meeting: ONE DAY	
DAY 1: 2020 In-Person		MORNING: 2020 Virtual	
11:30-12:00	Registration	9:50-10:00	Welcome and Setting Personal Goals
12:00-12:15	Welcome and Setting Personal Goals	10:00-10:30	Unwritten Jobs of the Program Director
12:15-12:45	Unwritten Jobs of the Program Director	10:30-11:00	Review of the Program Requirements
12:45-2:00	Review of the Program Requirements	11:00-11:30	Breakout Session #1 – Unwritten Jobs
2:00-2:15	Break (15 min)	11:00-11:30	Breakout Session #2 – Written Jobs
2:15-2:45	Resident Duty Hours and Supervision	11:30-11:45	Break
2:45-3:30	Resident assessment – Milestones	11:45-12:15	Resident Duty Hours, Supervision
3:30-3:45	Break (15 min)	12:15-12:45	Milestones 2.0
3:45-4:15	Establishing a Curriculum	12:45-1:15	Breakout Session #3 – Duty Hours,
4:15-5:00	GME Funding	12:45-1:15	Breakout Session #4 – Milestones 2.0
5:00-5:20	Open Form/Closing remarks	1:15-1:45	Accreditation
5:30-7:30	New Program Directors Reception	1:45-2:00	Breakout session #5 – Accreditation
		2:00-2:15	Break
		2:15-3:00	Virtual Lunch (optional discussion)
DAY 2: 2020 In-Person		AFTERNOON: 2020 Virtual	
7:55-8:00	Housekeeping	3:00-3:30	Associate PDs – What is their role?
8:00-8:30	Faculty Development	3:30-4:00	Establishing a Curriculum
9:15-9:45	Associate PDs – What is their role?	4:00-4:30	Breakout Session #5 – APD's Role
9:45-10:00	Break (15 min)	4:00-4:30	Breakout Session #6 – Curriculum
10:00-10:45	Developing a Competency Based Skills Curriculum	4:30-5:00	GME Funding
10:45-11:00	Open Forum	5:00-5:30	Dealing with the problem resident
11:00-11:50	Managing the Problem Resident	5:30-6:00	Resident Recruitment
12:00-1:00	Lunch (on your own)	6:00-6:30	Breakout Session #7 – GME Funding
1:00-1:45	Resident Recruitment	6:00-6:30	Breakout Session #8 – Problem Resident
1:45-2:30	Accreditation and Certification	6:00-6:30	Breakout Session #9 – Recruitment
2:30-2:45	Break (15 min)	6:30-7:00	Open Forum – Close
2:45-3:30	Meet the RRC-Surgery Executive Director		
3:30-4:00	Open Forum/Wrap up		

Although there were attendees from Hawaii and international locations, organizers wanted to consider a schedule that would be convenient at least to “both coasts,” to maximize attendance from registrants.

4 Unpredictability of COVID on Participants and Registrants

As planning was taking place at the same time of COVID-19 surges in some areas, the organizers anticipated that some speakers would not be able to commit to being present on the dates of the meeting. As such, all speakers, including panelists, paper presenters, and poster presenters, prerecorded their talks. While originally intended as a back-up plan, this contingency was ultimately used as the primary mode of delivery because of the added advantages of time control and minimize connectivity issues.

5 Community and Networking

The organizers recognized that 2 of the most valuable aspects of the in-person meeting were the networking and camaraderie. Organizers discussed ways in which this could be recreated—ultimately utilizing the breakout function of Zoom™ (San Jose, CA) with random assignment to rooms. Organizers created “Pajama Cocktails”—where registrants were encouraged to bring their own beverage and join in a social shuffling of breakout rooms with 6-9 participants in each room to address a variety of topics, with a particular focus on the impact of COVID-19 on our programs. A program director located in New York City led off the evening with a personal recount of the impact of COVID-19 on his program.

6 Flexible Content and Sharing

Given that the national situation surrounding COVID-19 was posing unique challenges to the surgical education community, the organizers recognized that there needed to be flexibility allowed so that additional topics could be added

TABLE 2. Comparison of Schedules and Content for the Main APDS Meeting, Planned 2020 In-Person and Final 2020 Virtual Programs

2020 Planned In-Person Meeting: THREE DAYS		2020 Actual Virtual Meeting: TWO DAYS	
DAY 1: 2020 In-Person		DAY 1: 2020 Virtual	
1:15-1:30	Opening of the 39th Annual Meeting	12:00	Paper and Poster Sessions open Virtually (through June 1)
1:30-2:30	Panel: Topics in Resident Application and Recruitment	1:00-1:10	Opening of the 39 th Annual Meeting
2:30-3:45	Paper Session I	1:10-2:30	Panel: Topics in Resident Application and Recruitment
3:45-4:00	Break	2:30-3:00	Break
4:00-5:15	Paper Session II	3:00-4:15	Panel Session II: Recruiting, Sustaining and Launching Preliminary Surgery Residents
5:15-6:00	Business meeting	4:15-4:30	Break
6:00-8:00	Cocktails and Concurrent Poster Sessions I-5	4:30-6:00	Keynote Address
6:00-9:00	Pajama Cocktails and Conversations		
DAY 2: 2020 In-Person		Day 2: 2020 Virtual	
7:00-8:00	Breakfast	11:00-12:15	Case Conferences for Program Directors
8:00-9:15	Panel Session II: Recruiting, Sustaining and Launching Preliminary Surgery Residents	12:15-1:00	Break
9:15-9:30	Break	1:00-2:30	Panel Session III: Alphabet Soup
9:30-10:15	Breakouts: Case Conferences for Program Directors	2:30-3:00	Break
10:15-11:15	Special Session: Case Conference Report-Out with Panelists	3:00-4:30	Presidential Address
11:15-12:00	Foundation and APDS Research Grant Update	4:30-5:00	Business meeting
12:00-1:00	Lunch and Concurrent Work Shops I-10	5:00-6:00	Cocktails and Breakout Sessions
1:00-2:00	Concurrent Work Shops 11-20		
2:00-2:15	Break		
2:15-3:15	Panel Session IV: Holding the Middle: General Surgery		
3:15-4:30	Paper Session III		
4:30-4:45	Break		
4:45-6:00	Presidential Address		
DAY 3: 2020 In-Person		OPEN for 30 Days Following the Meeting	
8:00-9:15	Quick Shot Paper Session IV	All Posters	
9:15-10:15	Keynote Address	All Oral Paper Presentations	
10:15-10:30	Break	All Recorded Sessions from Day 1 and Day 2	
10:30-12:00	Panel Session V: Alphabet Soup		

with short notice in formal presentations and also in social events.

7 Social Media and Marketing Plan

Together with the APDS social media team, there was a conscious attempt to run a concurrent virtual meeting to which anyone on Twitter would have access, so that the theme of surgical education would be broadly considered.

MATERIALS AND METHODS

The original programs of the NPDW and APDS were condensed to meet the above considerations (See [Tables 1 and 2](#)).

The APDS made an expedited decision to offer registrants to either receive a full refund of fees, or to convert the fees to registration for the Virtual Meeting, with an anticipated future credit to be offered for APDS 2021 after all costs were realized. It was determined that Virtual Meeting registrants would be able to access all content for a period of 5 weeks following the meeting, ending on June 1, 2020.

Appropriate Continuing Medical Education (CME) approval had been established through the ACS, but minor edits were necessary owing to the restructuring of the meeting and were approved. Registration, issuance of passwords, and seamless communications prior to the meeting were handled by APDS headquarters in Bethesda, Maryland.

TABLE 3. Comparison of Sessions between In-Person and Virtual Formats; an Intentional Metaphorical Re-allocation for Events

	In-Person Format	Virtual Format
Physical location	Convention center	Virtual space
Registration	Registration desk	Profile creation, web portal
NPDW	Large Sessions and Smaller Concurrent Sessions	Zoom Platform and Live Stream through Web Portal
Daily updates and announcements	Meeting app updates	Daily Email Highlights to Registrant Listserv
Panel sessions	Large hall	Zoom Platform with Panelists Visible
Keynote speaker	Large hall	Live Stream through Portal; Zoom background for introduction
Presidential address	Large hall	Live Stream through Portal; Zoom background for introduction
Poster sessions	Ballroom lobby	Recorded PPTs on Website, on web portal with interactive Q&A
Oral paper presentations	Large hall	Recorded PPTs on Website, on web portal with interactive Q&A
Cocktail hour	Lobby	Zoom platform, rotating Breakout sessions with random assignments
Workshops	Small concurrent sessions	Postponed
Meals	On your own	On your own
Questions	Microphones in large hall	Posted through Chat Boxes (live during panels, on web for posters and papers)

TABLE 4. Comparison of Individual Roles between In-Person and Virtual Format; an Intentional Metaphorical Re-allocation for Individuals

	In-Person Format	Virtual Format
Plenary speakers	Live PPT presentation	Prerecorded PPT presentation, available live for Q&A
Panel moderators	Introductions and Moderating Q&A via microphones in lecture hall	Introductions and Moderating Q&A from Chat Box input on Zoom
Program chair	In-person coordination of sessions and communications	Largely the same, but all electronic
Poster moderators	Moderation of sessions in-person, introductions and moderating Q&A	Early access to website for review and posting initial questions
Oral paper moderators	Introductions and moderating questions via microphones in lecture hall	Early access to website for review and posting initial questions
Panelists	Live PPT presentations in main hall, followed by Q&A	Pre-recorded PPT presentation on Zoom, followed by live Q&A
Exercise enthusiasts	Gathering in the lobby to run together or in the hotel gym for workouts	Gathering on Strava to log miles walked, run or cycled independently
Attendee with a question	Steps to the microphone and poses question and/or pontificates	Question posted through Chat Box, no opportunity for pontification

Paper and poster presentations were prerecorded via PowerPoint (PPT) in April, 14 days prior to the meeting, and posted to the APDS website (www.apds.org) through the APDS information technology contractor, RCS International (Ashburn, VA).

All streaming content and live sessions were conducted via a combination of Zoom (San Jose, CA) and a unique web portal, administered via audio visual consultants at Close-Up Productions (Garden Grove, CA).

The registrants interacted through the following formats which corresponded to what would have

been physical space at an in-person meeting; there was an intentional metaphorical re-allocation for both sessions and individuals. See [Table 3](#) for more details for a comparison of sessions and [Table 4](#) for a comparison of individual participant perspectives and roles in each format.

Organizers created a text group that enabled just-in-time communication between the program committee and audio-visual consultants. Two APDS Board members monitored the Twitter feed, regularly checking for posts with #APDS2020 or @APDSurgery and highlighting

TABLE 5. Percentage of Program Participants Replying “Strongly Agree” to Each Prompt in 2019 Versus 2020

	2019 N = 276*	2020 N = 77	p value
Overall, how would you rate this educational activity?	63.52%	62.34%	0.8494
Program topics and content met the stated objectives.	68.08%	72.73%	0.4349
Content was relevant to my educational needs.	70.36%	76.62%	0.2808
Educational format was conducive to learning.	60.91%	53.24%	0.2259
This activity has improved my competence.	57.00%	55.84%	0.8558
This activity will improve my performance.	55.37%	53.95%	0.8247
This activity will improve my communication skills.	50.81%	49.35%	0.5896
This activity will improve patient outcomes.	37.79%	40.26%	0.6934
This activity will improve processes of care and/ or healthcare system performance.	44.63%	46.75%	0.741
Program was free of commercial bias.	78.50%	100.00%	< 0.001

* Response rate 33.7% for 2019 versus 25.8% for 2020.

different aspects of the meeting. As an initial invitation, participants were also asked to tweet about their own program directors as well as the space where they would be “attending” the virtual meeting (e.g. their office, their desk, or their living room). Analysis of the hashtag #APDS2020 was performed utilizing analytics offered by Brand24, a media monitoring tool (Daytona Beach, FL).

Evaluations were collected by the APDS administrative group, via the APDS website by emailing participants. For each survey item, the percentage of respondents who responded “excellent or strongly agree” was compared between the 2 years using chi-squared hypothesis testing. Statistical testing was 2-sided at a significance level of 0.05 using Stata Statistical Software version 15.0 (Stata Corp., College Station, TX).

RESULTS

On March 19, 2020, when the APDS announced the virtual format, there were 684 individuals who had registered for the in-person APDS meeting. 298 converted their registration to the virtual format for the meeting with 59 registered for the NPDW.

Nine hours in the NPDW and 13 hours in the APDS Meeting were conducted virtually from April 28 through May 1. Web content and recorded presentations remained accessible through June 1, 2020.

The meeting transpired largely as expected. Access to the website was provided 1 week prior to the meeting so that the paper and poster moderators could review PPT presentations and post initial questions. The NPDW occurred on April 29th with a 9-hour period divided into 2 sessions with 1 meal break. The format included 2 formal presentations which were live-streamed followed by break-out sessions dedicated to each topic on Zoom. Users could attend one or the other, or flip between the 2 during the session.

The formal meeting was called to order at 1:00 PM EDT on April 30, 2020, by the APDS President. Expectations were set and announcements regarding flow and communications were made by the Program Chair. Paper and poster sessions opened to general attendees as expected that morning.

There were technical issues during 2 of the main sessions with the Chat Box on the main Web Portal, and the Live Stream of the Presidential Address needed to be reloaded once. However, the sessions stayed largely on time and were extended only if the questions and conversations seemed to necessitate more conversation. Each session’s end time was closely communicated between program chair, moderator, and audio-visual consultants via text messaging. Announcements and updates were given verbally at the beginning and end of each session and also were distributed via a listserv of attendees when necessary. Pajama Cocktails, which had intended to run only until there was 1 breakout room remaining (estimated to be after an hour and a half), lasted for 3 hours because of the persistence of the participants.

The APDS also conducted its business meeting in a virtual format utilizing Zoom. Organizers communicated the format and materials to the membership 2 weeks before the meeting with the exception of confidential financials. A “consent” agenda was utilized to cover most of the content and allowed for some efficiency of time. This was followed by brief presentations and report-outs from workgroups on current pressing topics in surgical education.

There were 66 total papers or posters on the website. There was a total of 8633 pageviews, with 5440 unique pageviews, and an average time spent on each page of 1 minute, 53 seconds. On each page, viewers had the opportunity to read the abstract or watch a recorded PPT (which could be self-advanced). PPT presentations were between 3 and 8 minutes. Attendees entered an average

of 2.5 initial comments or questions per paper or poster (164 total comments or questions, minimum = 0, maximum = 6). There were only 2 papers that had no comments or questions at all (1.2%). Each of these initial comments or questions had a reply from the author in 123 instances (75%), and in some cases led to threads involving other participants.

For every plenary session, including panels, presidential address, and keynote speaker, there were over 200 attendees logged into the portal. The Twitter handle of @APDSurgery gained 143 followers in April and 129 followers in May, both of which were over twice the usual monthly increase (current followers: 2,564). Tweets generated by @APDSurgery yielded 34,361 impressions on April 30 and 27,112 impressions on May 1. Respective engagement with Tweets issued by @APDSurgery on the same days were 2327 and 2048. Analysis of the hashtag #APDS2020 demonstrated a social media reach of 8748 individuals on April 30 and 14,803 on May 1.

Evaluations were largely positive. Free text was solicited for 5 questions, largely revolving around changes that the registrant would be taking forth from the conference. The first question, which was optional, without reference to the virtual format, and was phrased “how could this activity be enhanced?” had 38 free responses with 25 of them positive comments about the decision to proceed virtually in these circumstances. Some suggested a virtual component in the future as well when the conference returns to an in-person format.

There was no significant difference detected for high levels of participant satisfaction between 2019 and 2020 for the following items: overall program rating, topics and content meeting stated objectives, relevant content to educational needs, educational format conducive to learning, and agreement that the program will improve competence, performance, communication skills, patient outcomes, or processes of care and/or healthcare system performance. There was a significant difference detected for the prompt “program was free of commercial bias”, with 78.5% participants strongly agreeing in 2019 versus 100% in 2020 ($P < 0.001$) (Table 5).

In the weeks following the meeting, at least 5 other surgical societies reached out to discuss the format so that they could obtain lessons learned for their upcoming proposed virtual meetings. Members of APDS leadership also reported sharing the successes and lessons learned with a variety of local organizations and institutions interested in improving their virtual content.

DISCUSSION

In this paper, we present the background, development, and analysis of a national surgical education conference

performed virtually in April 2020. Our results show that such a meeting can provide education, engagement, and community through a virtual platform, and may serve as a model for other medical and surgical societies.

Although all members of the APDS would have preferred to meet in person, the circumstances of COVID-19 invited innovation. The organizers were able to execute a virtual meeting in a short time frame, largely by focusing on the components of the in-person meeting that could be translated and potentially even enhanced in the virtual format. Having the meeting in the same time “foot-print” of the planned in-person meeting allowed our membership to keep that time protected. It also permitted the annual transition of the APDS officers.

There was close communication throughout the meeting via text messages and Zoom™ chat boxes between audio-visual providers, meeting organizers, and administrative directors. Regular sessions were held to debrief and troubleshoot scenarios and create back-up systems as needed. (For example, the chat box on the Web Portal was not initially working, and so an email address was distributed where listeners could pose questions which were then relayed directly to the moderators of each session).

In the spring of 2020 nationally, entities have found creative ways to continue education in a virtual format. The shift in the number of users of virtual platforms between January and April 2020, as social distancing was widely implemented, helped smooth the virtual meeting, as attendees largely were very comfortable with the format prior to April 30. Communication to registrants was much easier, as the language was becoming more common.

Suggestions that APDS would share to other organizations planning larger meetings:

- 1 Attendees need a clearly communicated vision. Start with their needs and determine what virtual platforms will allow your organization to mimic positive aspects of in-person sessions. Lead with asking for their partnership.
- 2 Organize a variety of sessions so that attention is shifted for attendees in different formats over the hours of the meeting.
- 3 Throughout the meeting, be in constant contact with attendees who can function in a “play-testing” role, allowing you to better streamline communication and know where troubleshooting is needed.
- 4 Communicate in a simple and organized fashion to attendees—an email early in the day each day of the meetings with highlights and a recap of directions for the day helps registrants “show up” on time and manage expectations.
- 5 Minimize the number of platforms utilized. This maximizes attendance and participation. However,

ensure that there are also opportunities for breakout sessions and small groups that encourage individual engagement and participation.

- 6 The program committee and technical staff need to debrief regularly—a positive aspect of the virtual platform is the ability to quickly pivot as long as you have excellent communication and a competent audio-visual consultant.
- 7 Pay attention to timing—allow for adequate breaks and meals and set start and stop times to accommodate multiple time zones.
- 8 As most people will be at home, avoid early morning and late evening in order to allow attendees to maximize focused time at the meeting but still fulfill home and work obligations.
- 9 Consider recording content and making it available even after the scheduled meeting. This allows for the educational content to stretch beyond the meeting time. It also permits attendees to interact with content as they wish – reviewing sections of interest and moving more quickly through others.
- 10 Have several contingencies, dependent on the situation and meeting priorities. For example, having pre-recorded sessions allows flexibility if presenters are unable to attend unexpectedly.
- 11 Communicate with attendees about the best viewing circumstances regarding bandwidth and applications for viewing. Send a link where the participant can test their connection before the meeting at their planned viewing location is helpful.
- 12 Save chat box conversations and utilize these for subsequent conferences and/or educational session plans.
- 13 If having paper and poster sessions, consider creating a schedule for author availability so that Q&A can occur in real time. However, if not possible, ensure that authors return to the web portal to answer questions periodically throughout the meeting time.
- 14 If there is a business meeting, carefully prepare, making the agenda and materials available to the membership beforehand. Allow time for Q&A verbally or through the chat box.
- 15 Manage expectations and be flexible.
- 16 Encourage the humanistic side. Encourage the presence of family members. APDS members were treated to impromptu violin and harpsicord

performances, tours of homes, and a reminder of our shared experience during COVID-19.

Based on word of mouth, formal participant evaluations, and feedback from panelists representing the American Board of Surgery (ABS), ACGME, Residency Review Committee- Surgery (RRC-Surgery) and National Resident Matching Program (NRMP), we consider our first virtual meeting to have been a tremendous success and we appreciated the opportunity to lead in this innovative format. Surgery educators needed this forum to interact during what has been one of the most stressful periods in our society's recent history. Experience with the virtual format will prepare the APDS well for anticipated challenges with our fall meeting at the ACS and unknown challenges to come in the spring of 2021. While our humanistic sense notes the importance of in-person meetings, the reality is that much of what we can do in-person can occur with less cost and disruption through virtual formats. Regardless of the future, there will be aspects of this virtual footprint that we will embed into regular educational seminars and during future in person meetings.

REFERENCES

1. Available at: <https://apds.org/about/>, Accessed May 30, 2020.
2. Available at: <https://durkan.seattle.gov/2020/03/as-part-of-ongoing-preparations-for-covid-19-mayor-durkan-issues-proclamation-of-civil-emergency-in-the-city-of-seattle/>, Accessed May 30, 2020.
3. Available at: <https://www.kingcounty.gov/depts/health/news/2020/March/6-covid-19-update.aspx>, Accessed May 30, 2020.
4. Available at: <https://www.seattletimes.com/seattle-news/health/coronavirus-daily-news-update-march-10-what-to-know-today-about-covid-19-in-the-seattle-area-washington-state-and-the-nation>, Accessed May 30, 2020.
5. Available at: <https://www.governor.wa.gov/news-media/inslee-issues-emergency-proclamation-limits-large-events-minimize-public-health-risk>, Accessed May 30, 2020.