Spotlighting Research During COVID-19: Introduction of an International Online Multi-Round Research Competition for Trainees

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Abstract

Problem: The coronavirus pandemic led to the cancellation of many academic events. While some transitioned to virtual formats, others disappeared, offering fewer opportunities for trainees to share research. Facing this challenge, the *Association of Women Surgeons* developed a novel approach. Designed to promote greater global inclusion, increase audience engagement and opportunities for networking and feedback from practicing surgeons, they restructured their annual trainee research symposium as a virtual, multi-round competition.

Approach: Submission to the research competition was open to trainees at any level. The competition comprised four rounds: (1) visual abstracts (all welcomed), (2) three-minute "Quickshot" presentation (32 advance), (3) eight-minute oral presentations (16 advance), and (4) final question-and-answer style defense (final 4 compete). Progression through the first three rounds was determined by public voting. Winners were determined by live voting during the final session.

Outcomes: A total of 73 visual abstracts were accepted for presentation. Fifty-six percent (n = 41) of first authors were medical students, 36% residents (n = 26), and 7% fellows (n = 6). Five were from international first authors (7%). Abstracts represented research topics including basic science (n = 6, 8%)), clinical outcomes (n = 38, 52%), and education (n = 29, 40%). Social media impressions exceeded a total of 30,000 views.

Next Steps: This virtual, multi-round research competition served as a blueprint for a novel approach to research dissemination. The format enabled expanded US national and international engagement with trainees in all stages of their career. Future research symposia should consider the impact of popularity bias, timing, and voting strategies during the event planning period to optimize success.

Keywords

resident education, social and electronic media, surgical education

Problem

The ongoing coronavirus pandemic challenged traditional forums for research dissemination, networking, and collaboration. Traditional events such as academic surgical conferences were often converted to virtual platforms or were canceled.[1–3] For the surgical community, this loss was particularly acute for trainees, who had limited opportunities for in-person networking and disseminating their academic work.[4–6] Women and underrepresented in medicine (UiM) trainees may be particularly vulnerable to these missed opportunities for career advancement.[7,8]

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In response to these challenges, novel approaches have been trialed.[9,10] One example of an innovative virtual research forum came from University Hospital Cleveland Medical Center's Research in Surgical Outcomes and Effectiveness Center (UH RISES). Surgeons piloted a department-wide research competition based loosely on college basketball's "March Madness." This was a bracket style competition, in which trainees presented research in multiple rounds of head-to-head competitions. Leadership from UH RISES partnered with the *Association of Women Surgeons (AWS)* to coordinate an enhanced, updated version of AWS's annual surgical trainee research competition to become an online, multi-round research competition entitled "AWS Research Madness: The Road to AWS 2020."

The aim of this initiative was to spotlight the research activities of surgical trainees (medical students, residents, and fellows) during the coronavirus pandemic through a virtual, multi-round research competition leading up to the AWS Annual Conference. We sought to create an engaging research experience for both presenters and audience members by expanding opportunities for members from the global academic surgical community and integrating interactive research presentation formats, with opportunities for feedback.

Approach

Research Competition Format

Submission to the research competition was open to all surgical trainees at any level. At least one author was required to be a current AWS member. Categories for submission included: basic science, clinical outcomes, and medical education.

The competition consisted of four main rounds (Figure 1): (1) visual abstracts posted to social media (2) "Quickshots" viewed over Zoom, (3) oral presentations over Zoom, and (4) a final live question-and-answer style defense. In order to standardize submissions, authors were provided with an abstract and presentation template, and a video tutorial detailing contest expectations. Progression through the first three rounds was determined by public voting conducted using the Research Electronic Database Capture (REDCap) survey platform. Final round voting occurred live via an anonymous Zoom poll. To help minimize potential security concerns, prior registration was mandated in rounds two through four.

Competition submissions, consisting of visual abstracts, were recruited via emails sent to AWS members and posts to AWS's social media platforms (Instagram, Twitter, Facebook). Visual abstracts were included in the first round if they met eligibility criteria and were submitted in an appropriate visual abstract format (eg,
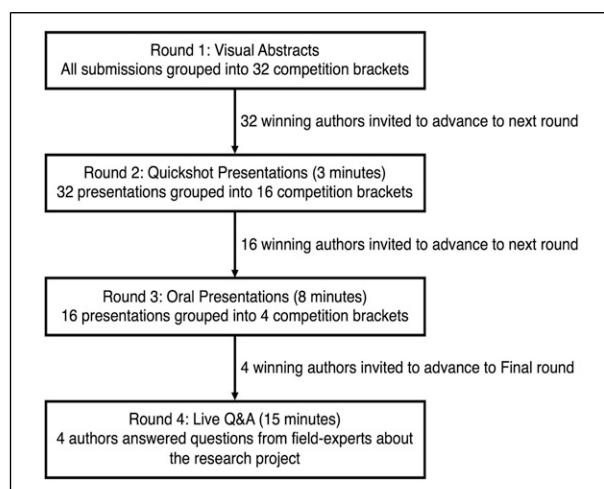
Figure 1. Overview of research competition structure: round (1) visual abstracts, round (2) Quickshot presentations, (3) oral presentations and (4) live question-and-answer style defense. In each round, authors were grouped into competition brackets and audience members voted on which project should advance to the following round. The project with the most votes in each bracket advanced to the subsequent round.

primarily pictorial in nature, less than 50% text, tables used sparingly). Submissions in need of reformatting were given an opportunity to revise their visual abstract. Visual abstracts were excluded if they were judged by organizers to not meet the pre-specified criteria at this stage. Visual abstracts were grouped in sets of 2–3 visual abstracts based on topic, and participants could vote on one of the abstracts via AWS' social media channels. The REDCap voting survey for the first round was open for five days following promotion. Participation in each round was free and open to the public. Top scoring abstracts in each group advanced to the second round.

The winners from round one ($n = 32$) were then asked to submit a pre-recorded, three-minute Quickshot presentation of their work. These were organized into 16 head-to-head pairs featured via a live Zoom event over two days. Sessions were staggered (one early evening for East coast participants, one later to accommodate West coast participants) to increase author engagement. Quickshots were assigned to sessions based on the timezone of the presenting author. Voting was open for 48 hours following each live event, to allow for participation in an asynchronous manner for those unable to attend the live presentations.

Round three followed a similar design with 16 winning authors invited to give pre-recorded oral presentations during one of two staggered live Zoom events. For round three, participants were randomly assigned to one of four semi-finalist pools (two competing during each live session). Voting was again open for 48 hours following presentation.

Winners from each pool advanced to the final four. During round four, participants gave a live, updated version of their original Quickshot and participated in a question-and-answer session during which they responded to questions asked by two invited expert discussants in their field.

Feedback

During the second and third rounds of the competition, we invited experts (practicing surgeons chosen based on demonstrated leadership and mentorship in their surgical field) to comment on trainee presentations. Each expert provided personalized feedback via email that included comments on the strengths and weaknesses of their assigned presentations in the following areas: innovation, organization, completeness of results, and clarity of conclusions. Experts provided comments to all trainee authors, regardless of advancement within the competition. Presenters in later rounds were offered reviewer contact details in order to facilitate professional opportunities for further questions and advice. The virtual platform afforded the opportunity to invite and include experts from diverse US and international practice settings.

Social Media Strategy

Twitter was used as the primary social media platform for promotion of the research competition visual abstracts, live events, and voting. Strategies to increase visibility among social media users in rounds two through four included tagging participating authors' and their respective institutional accounts, which were requested at the time of initial enrollment. In the final round, the visual abstracts of each finalist were featured on social media, with institutional affiliation, headshot, and tagging their personal and institutional Twitter accounts. Each round was promoted via email to all AWS members as well as AWS's other social media accounts (Instagram). Authors were encouraged to engage with social media posts, including sharing them with mentors and retweeting through personal forums.

Outcomes

Demographics of Research Competition Participants

A total of 81 visual abstracts were submitted for consideration in the competition. Of these, 73 (90%) were included in the first round (Table 1). Fifty-six percent of participants were medical students (41/73), 36% were residents (26/73), and 8% were fellows (6/73). Most (70%) included a trainee AWS member as first author (51/73). Five were international trainees (7%). The majority of abstracts were classified as clinical outcomes (52%, 38/73) and medical education (40%, 29/73), while a minority represented basic science research (8%, 6/73)

Medical students progressed through all rounds of the competition, with one only medical student competing in the final round (25%, 1/4) (Table 1). While both residents and fellows were represented in early stages, all other finalists were residents (3/4). All participants in the final round were from US-based institutions (100%, 4/4). Topic of the final presentations featured clinical outcomes research (50%) and medical education research (50%).

Audience Registration and Voting

Overall, 276 people registered for the second round, 127 people registered for the third round, and 91 people registered for the final round.

A total of 3,423 votes were received for the first round of the competition. However, 77% of voters voted only for a single round of abstract pairings (2,649/3423) and these votes were excluded. In response to this early voting pattern, the organizers took steps to enhance voter security in later rounds. In rounds two and three, votes were only counted if the email address used to submit had also registered for the respective event. A total of 45 attendees voted on the Zoom poll during the final round live event.

Social Media Impressions

Social media impressions were based on the AWS Twitter account (@WomenSurgeons), which hosts approximately 33,000 followers and were linked by #AWSResearchMadness. The initial release post, advertising round one of the competition was viewed independently by 17, 251 Twitter users. Promotion of the second and third rounds saw an average of 5634 Twitter users per post. Social media posts related to the final round of the competition were viewed by an average of 1555 Twitter users.

Strengths of Innovation

The virtual platform served as an opportunity to strengthen and promote academia within a global community of women surgeons, trainees, and allies. Attendance was free, enabling accessibility especially for early career academics, whereas in live format, this type of engagement was limited. The elimination of cost and travel barriers may have encouraged participation by international authors.[11] Organizers also had the unique opportunity to actively recruit international discussants to provide feedback to participants. Discussants included AWS member surgeons from Europe, Africa, and South America. The online platform also increased the inclusion

Table 1. Demographics of authors per round of the research competition.

	Round 1 n (%) (n = 73)	Round 2 n (%) (n = 32)	Round 3 n (%) (n = 16)	Round 4 n (%) (n = 4)
Trainee level				
Medical student	41 (56%)	15 (47%)	6 (38%)	1 (25%)
Resident	26 (36%)	13 (41%)	8 (50%)	3 (75%)
Fellow	6 (8%)	4 (12%)	2 (12%)	0 (0%)
Location of first-author institutional affiliation				
US	68 (93%)	29 (91%)	15 (94%)	4 (100%)
Non-US	5 (7%)	3 (9%)	1 (6%)	0 (0%)
Submission category				
Basic science	6 (8%)	2 (6%)	0 (0%)	0 (0%)
Clinical outcomes	38 (52%)	19 (59%)	8 (50%)	2 (50%)
Medical education	29 (40%)	11 (34%)	8 (50%)	2 (50%)

of national and international attendees, many of whom have not previously attended the in-person AWS research event.

The interactive nature of this research competition challenged authors to present their research through a variety of formats. The first round of the competition featured a series of visual abstracts accessible to the surgical community to view, comment, and discuss. Institutional pride provided an impetus to promote the research of trainees and provide exposure to the surgical community. The subsequent rounds promoted creativity in prerecorded videos, computer animation, and innovative presentations.

Attendees were encouraged to vote and interact with the presenters in each round. "Live" voting created a friendly competition. Throughout the competition, the organizers actively promoted interaction between faculty and trainees. This approach enabled audience members to further engage in the competition's process, rather than just view the presentations. Overall, as we transition to a post-COVID landscape, this format is advantageous in the sense that it harnesses global expertise and engagement, promotes virtual interactivity, and creates opportunities for virtual networking.

Next Steps

Future Directions and Opportunities

While several positive takeaways exist, there were also aspects of the competition that warranted further refinement.

1. *Mitigating "popularity" bias:* During the first round of the competition, a large portion of people voted for a single visual abstract rather than engage with all of the abstract pairings. This preference for single voting may have been based on prior knowledge of the author or the author's

institution instead of the quality of the work itself. To mitigate this issue, organizers recommend voting to be required for all groups/pairings in a single session or split-day event. We encourage limiting voters to those with a previously registered valid email address and would consider implementation of a mixed public voting and expert discussant review to help ensure that the most popular and well-formulated research can advance. Blinding of visual abstracts (eg, authors and institutions may also reduce the chance of overall popularity bias. However, it is important to keep in mind that anonymity may compromise engagement from social media users, therefore this risk should be balanced accordingly. Finally, within this format of academic dissemination, accepted research was judged via social media users, meaning any interested member of the public community was able to vote on our content. While there was a presumed natural affinity towards members of the academic surgery and women in surgery community, we were unable to concretely vet voter expertise possibly yielding an unforeseen element of bias. Targeted social media and advertising strategies may aid to entice organizers' preferred audience, should this be a goal of the event.

2. *Timing of online the event:* Attendance can be variable when hosting online events. We experienced fluctuation in attendance by approximately 20% when rounds of the competition were hosted at 7:30 PM EST as opposed to 9:00 PM EST, prompting a schedule change for future rounds. Intended to promote increased accessibility, in future years, the organizers recommend later sessions where possible, when more attendees are likely able to attend. Efforts to balance accessibility and practicality of hosting a research

competition across multiple time-zones remain challenging.

3. *Live voting* versus *late voting*. During the second and third rounds, the audience members were encouraged cast their votes as they watched the presentations live. For those who wanted to participate but were unable to attend, a recording of the webinar was sent to all registrants and remained open for 72 hours. Roughly one-half of the votes that were cast came from attendees who watched the second and third rounds live; the other half were from those who presumably watched the recording before submitting their vote. As round four was a live event, votes were only counted at the end of the live question-and-answer session. As a result, there were proportionally more votes cast for rounds two and three. In the future, the organizers would consider restricting voting in later rounds to live attendees in order to strengthen the validity and merit of each vote.

Conclusion

In response to the coronavirus pandemic, opportunities for in-person research dissemination and networking within the academic surgical community were limited. This novel format serves as a valuable blueprint for organizations seeking to produce engaging opportunities for research dissemination and networking. This was a new creative approach to provide trainees with chances for mentorship, collaboration, and career advancement. In light of evolving formats for virtual research symposia, consideration towards the strengths and weaknesses of different modes, is essential for future event planning.

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Declaration of Conflicting Interests

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