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My Thoughts/My Surgical Practice

Virtual surgery residency selection: Strategies for programs and candidates



In response to the disruption in surgical education that has resulted from the COVID-19 pandemic, the American College of Surgeons (ACS) Division of Education through the ACS Academy of Master Surgeon Educators appointed a Special Committee of national leaders and experts in surgical education and charged the Committee with the responsibility of addressing major educational needs during the pandemic and establishing the foundation for future innovations in surgical training.¹ A major area of focus of the Committee was the surgery residency selection process and interviews that needed to be conducted virtually. The interview is an important component of the selection process of future surgery residents. The interview plays a key role in providing both the residency programs and candidates for residency positions helpful information to support the best match between the programs and the candidates. The interview may also facilitate recruitment of appropriate residents who are more likely to complete their training and enter the surgical workforce.^{2–4} Virtual interviews have recently received great attention within the context of the COVID-19 pandemic. The Committee noted that the Coalition for Physician Accountability had formally recommended that all 2020–21 residency interviews proceed virtually.⁵ In order to comprehensively address the process of virtual interviews of surgery residency program candidates, the Committee gathered information on the perspectives of different stakeholders and developed specific recommendations for surgery program directors and surgery residency candidates. Information on the perspectives of various stakeholders was gathered through feedback from panels of business experts, program directors, and learners. The purpose of this work is to share these perspectives along with recommendations for programs and candidates.

Lessons learned from the business sector

The business sector has been utilizing virtual interviews for years, developing reliable technologies and predictable strategies based on the needs of specific organizations. One recommendation is to use the same media platform for all, while performing both asynchronous and synchronous interviews.^{6,7} A professionally-done, asynchronous video of an organization illustrating their culture can be an effective differentiator. Similarly, a professional, asynchronous video clip of a candidate can serve as an effective introductory tool. Highly structured interviews can promote “fairness”, mitigate “bias”⁸ and enhance predictability of future success. Conversely, unstructured interviews can also have high value when identifying behavioral characteristics and intangibles that are

difficult to elicit in a structured environment. Less formal discussions between candidates and staff can be done creatively using various virtual technologies (Table 1).

Perspectives of program directors (PDs)

Traditionally, programs have conducted in-person interviews as a means to present the programs accurately and to simultaneously identify those applicants most likely to thrive in the training environment and ‘fit’ in the program’s culture. As a result of the COVID-19 pandemic, many fellowship programs were forced to gain early experience with virtual interviews in 2020; and insights reveal a virtual process rife with both challenges and opportunities.

Specific challenges noted with the virtual process include PD concerns regarding a diminished effect of the interview on the applicants’ decision-making process. Other challenges include increased applicant volume given the convenience and cost mitigation involved in the virtual format. Additional pressures cited include a need for more touchpoints with applicants through social media and more comprehensive websites. An important lesson learned was that selection bias introduced by factors such as candidates’ video quality and visual background, needs to be mitigated. Furthermore, PDs highlighted the potential loss of observing applicants’ interpersonal interactions with staff, and mentioned PD and faculty inexperience with remote assessment of applicants’ intangibles, including the ability to gauge the interest of applicants in the program.

In contrast, PDs with some experience in the virtual context mentioned that with planning and faculty commitment, it is possible to navigate the challenges of a virtual interview process and improve upon processes for possible post-pandemic retention. Some advocate hybrid models, whereby programs use virtual formats for initial interviews, and subsequent on-site interviews for a selected group of candidates. Strategies to preserve informal interactions through virtual social hours as well as chat rooms are also being considered. The stimulus to develop more objective assessment tools, and utilize more behaviorally-based questions is increasingly being recognized. Some specialties are using ‘signaling’ strategies, whereby applicants are allowed to indicate, or ‘signal’ a pre-defined number of programs that are of significant interest. This strategy assists PDs, as well as applicants, in narrowing the large number of interactions. Due to the significant cost-savings to candidates with decreased travel, and increased program flexibility staffing interview days with busy clinicians, it is likely that the virtual format will be further adapted for the benefit of applicants and programs going forward.

Table 1
Summary of strategies and applications to support programs and candidates in the virtual residency selection process.

Virtual Resident Interview Strategy (Timing)	Description	Select Virtual Applications ^a
Overview of Program for candidates (Asynchronous)	Initial introduction to Program. Suggest welcome remarks from Chair and Program Director, virtual tour of hospital and facilities, and a glimpse of neighboring geography and resources.	Puck Vimeo Panopto
Candidate virtual cover letter (Asynchronous)	Screening tool for Programs, assessed by multiple faculty members with uniform evaluation criteria. Candidates instructed to provide an “elevator pitch” or answer two or three structured questions. Two to 3 min, and there MUST be uniformity of the video platform and a standard background used by all candidates with no enhancements permitted.	Loom Puck Apple Video Toolbox
<u>Individual</u> candidate virtual interview (Synchronous)	Consider including one to two faculty members (maximum) with one candidate per session, and numerous sessions. Only faculty members and candidates faces should be seen, and standard dress attire should be planned for all. Programs should consider optimizing technology by using “waiting rooms,” or “break-out rooms,” as well as built in timers, and questions via the “chat” functions.	Zoom GoToMeeting BlueJeans
<u>Formal group</u> follow-up (Synchronous)	A follow up “second look” synchronous (live) webinar. A 1-h live webinar could include interested candidates, faculty members and residents. Invitations should be sent to all synchronous interviewees. Ground rules should state that candidate inquiries should come in the form of live typed questions in chat rooms viewed by the entire group. A moderator can monitor the “chat” and assign specific faculty members to response.	Zoom CareerEco WebEx Microsoft Teams
<u>Informal group</u> mixing (Synchronous)	A virtual “happy hour,” or question and answer session to help ascertain applicant characteristics not gleaned from the formal interviews, as well as the culture of the program for candidates.	High Fidelity Zoom Microsoft Teams

^a We have no financial interests and are not endorsing any of these vendors. Instead, we provide their names as examples of well-known entities in this arena.

Perspectives of candidates

Candidates have specific expectations as they attempt to determine the surgical program that will provide the most optimal training experience. Because of the lower cost associated with virtual encounters, access to programs will increase, and the playing field for candidates from diverse backgrounds may be leveled. The virtual interview may shift the gathering of objective program information (e.g. clinical volume, didactic teaching, research productivity, simulation curriculum, etc.) to the candidates, and in advance of virtual encounters, facilitating the use of the virtual interaction time with programs for other informational and personal exchange. Importantly, the informal interaction between the current trainees and applicants has been identified as vital experience to assess the culture of the program.⁹ To mitigate the concern that this aspect will be diminished in virtual interviews, candidates must seek information on the mission and culture of the program prior to, and throughout, the virtual interview process. Candidates expect PDs to provide more touchpoints between applicants and the program that specifically include current residents. In pivoting to this virtual experience, applicants will need to prepare more extensively in order to perform optimally, to glean the most from the experience, and to represent themselves as well as possible. This may include the acquisition of technology platforms, optimization of physical space, and performing a mock virtual interview.¹⁰

Logistics of virtual interviews (Table 1)

Several publications have advocated the benefits of virtual interviews.^{9,11} Based on the points enumerated above, we present recommendations for best practices in the virtual setting. Organization and efficiency are crucial for the success of this process. Each program must identify the interview components that are a priority. We recommend using a hybrid approach that includes a combination of asynchronous and synchronous methods to execute a successful residency interview process for both candidates and programs. Programs should initiate the process by providing applicants an asynchronous video about the program that would include welcome remarks and general information provided by the Chair and PD, a virtual tour of the facilities by residents, and a glimpse of the neighboring geography and resources.

After the usual screening of applications, programs can consider requiring an initial asynchronous video recording by the applicant. An asynchronous recorded video can serve as a “virtual cover letter” with a duration of two to 3 min, where candidates are instructed to either provide an “elevator pitch” or to answer two or three structured questions. In an attempt to obviate bias, uniformity of the video platform with a standardized background must be used by all candidates, with no enhancements permitted. The video cover letter, a modality already used by industry³, can serve as a good screening tool when judged by a panel of dedicated faculty.

Candidates selected after the electronic application and asynchronous recorded video should then be offered a synchronous (live) virtual interview. Structure, organization, and uniformity is critical to this process. Much of the general structure of the in-person interview can be maintained, although programs may consider truncating virtual activities as it seems plausible that the attention span of both program representatives and applicants may be shorter than during in-person interactions.⁹

We encourage selection committees to develop a list of attributes considered of highest value to the culture of their program. This provides a key mechanism for creating a structured interview process, with the ideal number of program faculty and current residents involved and the appropriate number of “sessions.” There may be value in increasing the number of individuals who assess applicants for a more objective evaluation. Additional virtual interview etiquette should include rigid adherence to schedules, punctuality, business attire, and nonintrusive questioning per ACGME guidelines. Programs should optimize technology by using “waiting rooms,” or “break-out rooms,” as well as built-in timers and questions via “chat” functions. It is critical that there not be technical issues (on the part of the applicant or program) as this can significantly impact final impressions.

Because of limited personal interaction time with the virtual interview process, a post-interview wrap-up session with the PD may be helpful for interviewees to ask parting questions and hear about next steps.¹² As noted above, the informal interaction between current residents and applicants can be replicated virtually. A virtual “happy hour” may highlight applicant characteristics not gleaned from the formal interviews and provide a mechanism to showcase the “culture” of the program, helping to determine the “fit” of the applicant to the program.

As we embark on the endeavor of virtually-based resident

selection, new strategies will undoubtedly evolve. We see this as an opportunity to advance our traditional recruitment process. We intend to interview PDs and candidates subsequent to this recruitment season to catalogue the lessons learned. The findings will be relevant to the entire House of Surgery and should propel us forward in the science and practice of effective selection of surgery residents.

Declaration of competing interest

No financial disclosures or other conflicts of interest

References

- American College of Surgeons Bulletin Brief. Education. ACS Academy of master Surgeon Educators committee addresses challenges and opportunities in surgical training during COVID-19. Available at: <https://www.facs.org/publications/bulletin-brief/051920/education#academy>. Accessed May 25, 2020.
- Ellis RJ, Holmstrom AL, Hewitt DB, et al. A comprehensive national survey on thoughts of leaving residency, alternative career paths, and reasons for staying in general surgery training. *Am J Surg*. 2020;219(2):227–232.
- Ng CWQ, Syn NL, Hussein RBM, Ng M, Kow AWC. Push and pull factors, and the role of residents in nurturing medical students' interest in surgery as a career option in a multicultural Asian context: results of a prospective national cohort study. *Am J Surg*. 2020. <https://doi.org/10.1016/j.amjsurg.2020.04.036>. Received 8 February 2020, Revised 12 April 2020, Accepted 25 April 2020, Available online 30 April 2020.
- McKinley SK, Kochis M, Cooper CM, et al. Medical students' perceptions and motivations prior to their surgery clerkship. *Am J Surg*. 2019;218(2):424–429.
- Coalition for Physician Accountability. Final report and recommendations for medical education institutions of LCME-accredited, U.S. Osteopathic, and non-U.S. Medical school applicants. Available at: https://mk0nrmp3oyqui6wqfm.kinstacdn.com/wp-content/uploads/2020/05/2020.05.06-Final-Recommendations_Executive-Summary_Final.pdf. Accessed May 25, 2020.
- Gorman CA, Robinson J, Gamble JS. AN investigation into the validity OF asynchronous web-based video employment-interview ratings. *Consult Psychol J Pract Res*. 2018;70:129–146.
- Wauing J, Hymes RW, Beatty JE. The effects of video and paper resumes on assessments of personality, applied social skills, mental capability, and resume outcomes. *Basic Appl Soc Psychol*. 2014;36:238–251.
- Hiemstra AMF, Derous E, Serlie AW, Born MP. Fairness perceptions of video resumes among ethnically diverse applicants. *Int J Sel Assess*. 2012;20:423–433.
- Day RW, Taylor BM, Bednarski B, et al. Virtual interviews for surgical training program applicants during COVID-19: lessons learned and recommendations. *Ann Surg*. 2020 May 20. <https://doi.org/10.1097/SLA.0000000000004064>. Published online 2020 May 20. PMID: PMC7268876 PMID: 32433281.
- Jones RE, Abdelfattah KR. Virtual interviews in the era of COVID-19: a primer for applicants. *J Surg Educ*. 2020;77:733–734.
- McKinley SF, Fong ZV, Udelsman B, Rickert CG. Successful virtual interviews: perspectives from recent surgical fellowship applicants and advice for both applicants and programs. *Annals of Surgery*. 2020. <https://doi.org/10.1097/SLA.0000000000004172>.
- Bird SB, Hern HC, Blomkalns A, et al. Innovation in residency selection: the AAMC standardized video interview. *Acad Med*. 2019;94:1489–1497.

Paris D. Butler^a, Alisa Nagler^b, Anthony Atala^c, L.D. Britt^d, James Denny^e, Brenessa Lindeman^f, John Mellinger^g, Ajit K. Sachdeva^b, Kathryn Spanknebel^h, Mohsen Shabahang^{i,*}

^a Department of Surgery, Division of Plastic Surgery, University of Pennsylvania, United States

^b Division of Education, American College of Surgeons, United States

^c Department of Urology, Wake Forest University, United States

^d Department of Surgery, Eastern Virginia Medical School, United States

^e Department of Otorhinolaryngology, Johns Hopkins University, United States

^f Department of Surgery, University of Alabama-Birmingham, United States

^g Departments of Surgery and Medical Education, Southern Illinois University, United States

^h Department of Surgery, New York Medical College, United States

ⁱ Department of Surgery, Geisinger Health, United States

* Correspondence author. Geisinger Health, 100 North Academy Avenue, Danville, PA 17822, United States. E-mail address: mmshabahang@geisinger.edu (M. Shabahang).

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