



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.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

journal homepage: [www.JournalofSurgicalResearch.com](http://www.JournalofSurgicalResearch.com)

## Impact of COVID-19 on Away Rotations in Surgical Fields



Carter J. Boyd, BS,<sup>a,\*</sup> Dani C. Inglesby, BS,<sup>b</sup> Britney Corey, MD,<sup>c,d</sup>  
 Benjamin J. Greene, MD,<sup>e</sup> Michael A. Harrington, MD, MPH,<sup>f</sup>  
 Michael D. Johnson, MD,<sup>g</sup> Timothy W. King, MD, PhD, MSBE,<sup>a,c,h,i</sup>  
 Soroush Rais-Bahrami, MD,<sup>j,k,l</sup> and M. Lance Tavana, MD<sup>m</sup>

<sup>a</sup> School of Medicine, University of Alabama at Birmingham, Birmingham, Alabama

<sup>b</sup> College of Medicine, Medical University of South Carolina, Charleston, South Carolina

<sup>c</sup> Department of Surgery, University of Alabama at Birmingham, Birmingham, Alabama

<sup>d</sup> Department of Surgery, Birmingham Veterans Affairs Medical Center, Birmingham, Alabama

<sup>e</sup> Department of Otolaryngology, University of Alabama at Birmingham, Birmingham, Alabama

<sup>f</sup> Department of Plastic Surgery, University of South Florida, Tampa, Florida

<sup>g</sup> Department of Orthopedic Surgery, University of Alabama at Birmingham, Birmingham, Alabama

<sup>h</sup> Department of Biomedical Engineering, University of Alabama at Birmingham, Alabama

<sup>i</sup> Chief of Plastic Surgery, Birmingham VA Medical Center, Birmingham, Alabama

<sup>j</sup> Department of Urology, University of Alabama at Birmingham, Birmingham, Alabama

<sup>k</sup> Department of Radiology, University of Alabama at Birmingham, Birmingham, Alabama

<sup>l</sup> O'Neal Comprehensive Cancer Center at UAB, University of Alabama at Birmingham, Birmingham, Alabama

<sup>m</sup> Division of Plastic and Reconstructive Surgery, Medical University of South Carolina, Charleston, South Carolina

### ARTICLE INFO

#### Article history:

Received 17 April 2020

Accepted 4 May 2020

Available online 21 May 2020

#### Keywords:

Residency applications

Match

Away rotations

COVID-19

Coronavirus

Surgery

### ABSTRACT

The COVID-19 pandemic has presented a variety of challenges in the medical education curriculum, one of which is the possible loss of summer and fall away rotations for fourth year students applying into surgical subspecialties. Subsequently, a lack of in-person evaluations may have a major impact on an applicant's perception of the residency and the program's ability to assess the individual applicant. This is especially crucial for applicants without a home program in their specialty of interest, as away rotations are an important opportunity to confirm interest in pursuit of a subspecialty, obtain letters of recommendation, and make positive impressions at programs of interest. The objective of this article is to assess the current COVID-19 pandemic situation in light of away rotations and to provide recommendations for surgical subspecialty programs and applicants to have the best outcome during this upcoming application cycle. In particular, we emphasize the importance of implementing universal processes within each individual subspecialty. This will provide equitable opportunities for all applicants, minimizing potential biases or disadvantages based on geographic location or availability of a program at an applicant's home institution.

© 2020 Elsevier Inc. All rights reserved.

\* Corresponding author. School of Medicine, University of Alabama at Birmingham, 200 16th Street S, Apt. 3026, Birmingham, AL 35233. Tel.: +1318 780-1049; fax: (205) 934-4933.

E-mail address: [carterjosephboyd@gmail.com](mailto:carterjosephboyd@gmail.com) (C.J. Boyd).  
 0022-4804/\$ – see front matter © 2020 Elsevier Inc. All rights reserved.

<https://doi.org/10.1016/j.jss.2020.05.049>

The emergence of the COVID-19 pandemic has had a tremendous impact on medical education throughout the country as most schools have transitioned medical students out of hospital clinical rotations and into online surrogates to complete course requirements. As the effects of the virus continue to evolve, it is quite possible that the pandemic will continue into the summer and fall months during which away or audition rotations typically are scheduled, immediately before the residency application and interview season.<sup>1</sup> Recognizing the weight of this situation, the Association of American Medical Colleges (AAMC) has halted all online away-rotation application and scheduling activity across the Visiting Student Learning Opportunities software for 2 wk to allow for time for discourse to determine if and how audition rotations will proceed.<sup>2</sup>

Residency applicants across medical disciplines participate in month-long away rotations or acting internships. Participation is especially prevalent within the competitive surgical subspecialties including neurosurgery, otolaryngology, ophthalmology, orthopedics, plastic surgery, and urology.<sup>3</sup> In many of these fields, 50% or more of students completing away rotations match at a program where they rotated.<sup>3</sup>

The AAMC has provided resources to students who have scheduled away rotations that may be affected by the COVID-19 pandemic.<sup>4</sup> Although the AAMC has taken the stance to encourage medical schools to develop local substitutes for traditional away rotations, schools report feeling conflicted as there are concerns that suspension of these rotations may weaken students' applications.<sup>5</sup> One important component of any administrative decisions made by the AAMC or specific subspecialty governing bodies is that all programs agree to adhere to this decision, to provide equitable opportunities for all applicants. There are two manners in which the AAMC could proceed. The AAMC could initiate guidelines that all specialties should follow. Alternatively, if the AAMC decides not to outline overarching guidelines for all residency training programs, specialty-specific governing bodies can implement guidelines for applicants and training programs in their given specialty. This would provide standardized parameters for this process during this unprecedented application season.<sup>6</sup>

As new diagnoses of the COVID-19 pandemic begin to level off and hopefully diminish, varying regions of the country will likely lift social distancing measures at different times throughout the coming year. Simultaneously, medical schools will transition back to hospital-based clinical rotations in accordance with guidance from local and state public health agencies while maintaining a priority on the safety of their students. These truncated hospital-based clinical experiences for third year medical students will place more emphasis on catering toward their own students' education, potentially limiting the ability for fourth year external students to rotate. The inherent variation that will occur across the country could create potential inequity if some institutions accept external students for clinical rotations while other programs do not. Furthermore, students attending school in an area where they must remain quarantined longer may be at an implicit disadvantage if students living in other geographic areas could return to clinical activities and have the opportunity to travel to externship rotations.

One approach to this challenge could be to provide audition rotations with altered formats incorporating virtual exposures and experiences or abbreviated rotations (1-2 wk compared with the traditional 4 wk). Alternative options could include suspension of away rotations for this application cycle or postponing these travel rotations until the safety of all potential applicants and programs can be assured nationwide. A universal approach is particularly important to protect students who are at an intrinsic disadvantage without visiting rotations, including international medical graduates and students who lack a home residency program in the specialty to which they are applying. Audition rotations could be limited to these students who cannot gain the specific specialty experience at their home institution.<sup>7</sup> Other possible solutions include a delay in the residency application deadlines or a postponement for deadlines of receipt of the letters of recommendation particularly during a time in which four letters from the same specialty may be more challenging to attain.<sup>8</sup> Again, these measures are most impactful if the application process is universally adjusted, at the very least, among programs in each given specialty training.

If externship rotations are completely canceled in the upcoming months, programs will have to rely on other modes of exposure to potential candidates and adjust criteria in their selection of applicants during the interview season and ranking process. The letters of recommendation that are received during audition rotations are considered one of the most impactful pieces in the application process as the validity of the letters from one's home institution is sometimes questioned, and external institution letters of support are considered normalizing.<sup>9</sup> In the absence of these rotations and opportunities for obtaining such letters, other criteria should be considered more heavily. Some programs have elected to use personality testing, testing specifically for judgment, or behavioral interview questions to provide more objective data on applicant personal qualities, as these types of assessments have been shown to predict an applicant's future behavioral traits in residency training, a time of high stress and much needed professional commitment.<sup>10</sup> In addition, programs could increase contact with applicant mentors to have a more complete understanding of an individual's attributes, although this may lead to bias in selection toward applicants with mentors who are well known by the programs contacting them and potential bias against those applying in fields underrepresented at their home medical schools. Programs will have to rely more heavily on an applicant's paper application (test scores, research, awards, and volunteer experiences) in the absence of away rotations. On the interview day and during associated social events, increased interaction between candidates and the program faculty and residents may make up for lost contact time from the absent externship. Programs may find it advantageous to increase the amount of time spent on each interview day. This, however, will require more coordination among programs, as overlapping interviews and the associated travel are often a reason for scheduling conflicts for applicants. In addition, there is a plan by several residency training programs to consider offering virtual exposure opportunities, not only for the interview process but throughout the season preceding the application and interview process. These opportunities, dovetailing with the increased use of

telemedicine platforms, may provide residency applicants a means to “virtually attend” grand round conferences and other resident didactic experiences, or even “virtually shadow” clinic visits or surgical operations remotely.

In addition to a tremendous educational opportunity, away rotations can help provide an applicant with a better sense of fit and an understanding of what they are looking for in a program. If unable to participate in away rotations, applicants would possess less information than in previous years when choosing programs and which interview offers to accept. This lack of information and familiarity could be resolved by an improvement in the available information on each programs' website. Specific improvements could include the rotation schedule, operative experience, residency research accomplishments, and information about the accomplishments and career paths of previous residents.<sup>11,12</sup> This information could be standardized among all programs within a specialty with the use of a common document dispersed by the governing body to be filled out by each individual program, so that applicants may be provided a direct comparison. Mentor perception of residency programs may also become more important during this application process. However, this may create an inherent bias in the applicant's selection process as their mentor's relationship with that program will have a greater bearing on the applicant's decision.<sup>13</sup> To provide this additional information, programs could elect to hold a virtual town hall in lieu of away rotation experiences hosted by their program director and residents to recruit future applicants and help provide insight that typically could have been gained during an audition rotation. This could be a scheduled event planned for the early fall during peak away rotation time and coordinated among programs within a specialty. This type of event may help direct application and interview attendance decisions during this time. Although the current pandemic poses immediate concerns to the 2020-2021 residency application cycle, this unfortunate situation may allow the medical education community an opportunity to reconsider the pros and cons of current practices with audition rotations and interview travel, given the exuberant costs that have been suggested to limit some applicants.<sup>14</sup>

In light of the potential losses of both the applicant and program insight traditionally provided by away rotations, it is important that the AAMC and specialty-governing bodies work together to ensure the safety and fairness of Visiting Student Learning Opportunities in the setting of the COVID-19 pandemic. This can be achieved by universal decision-making of governing bodies of these individual subspecialties and measures taken by both programs and applicants to increase awareness of their individual attributes.

## Acknowledgment

Authors' contributions: C.B., D.I., and M.L.T. were directly involved in the collection of resources, formulation of ideas, writing the manuscript, and approving the final version for submission. B.C., B.G., M.H., M.J., T.K., and S.R.-B were directly involved in the writing of the manuscript and approving the final version for submission.

## Disclosure

The authors reported no proprietary or commercial interest in any product mentioned or concept discussed in this article.

## REFERENCES

1. Neher RA, Dyrdak R, Druelle V, Hodcroft EB, Albert J. Potential impact of seasonal forcing on a SARS-CoV-2 pandemic. *Swiss Med Wkly*. 2020;150:w20224.
2. Association of American Medical Colleges. Coronavirus and the VSLO program. Association of American Medical Colleges Website. Available at: <https://students-residents.aamc.org/attending-medical-school/article/coronavirus-covid-19-and-vslo-program>. Accessed April 15, 2020.
3. Higgins E, Newman L, Halligan K, Miller M, Schwab S, Kosowicz L. Do audition electives impact match success? *Med Educ Online*. 2016;21:31325.
4. Association of American Medical Colleges. Coronavirus (COVID-19) and the VSLO program. Visiting student learning opportunities website. Available at: <https://students-residents.aamc.org/attending-medical-school/article/coronavirus-covid-19-and-vslo-program/>. Accessed March 31, 2020.
5. American Medical Association. COVID-19: how the virus is impacting medical schools. Available at: <https://www.ama-assn.org/delivering-care/public-health/covid-19-how-virus-impacting-medical-schools>. Accessed April 14, 2020.
6. American Council of Academic Plastic Surgeons. 2019-2020 integrated plastic surgery interview update. American Council of Plastic Surgeons website. Available at: <https://acaplasticsurgeons.org/multimedia/files/2019/Interview-Policy.pdf>. Accessed April 15, 2020.
7. Association of Professors of Gynecology and Obstetrics. APGO and CREOG residency application response to COVID-19. Association of professors of gynecology and obstetrics website. Available at: <https://www.apgo.org/wp-content/uploads/2020/04/APGOCREOG-Response-Final-April-141.pdf>. Accessed April 16, 2020.
8. Gabrielson AT, Kohn TP, Clifton MM. COVID-19 and the urology match: perspectives and a call to action. *J Urol*. 2020. <https://doi.org/10.1097/JU.0000000000001037>.
9. Nguyen AT, Janis JE. Resident selection protocols in plastic surgery: a national survey of plastic surgery independent program directors. *Plast Reconstr Surg*. 2012;130:459–469.
10. Lubelski D, Healy AT, Friedman A, Ferraris D, Benzel EC, Schlenk R. Correlation of personality assessments with standard selection criteria for neurosurgical residency applicants. *J Neurosurg*. 2016;125:986–994.
11. Hashmi A, Policherla R, Campbell H, Kahn FA, Schumaier A, Al-Mufarrej F. How informative are the plastic surgery residency websites to prospective applicants? *J Surg Educ*. 2017;74:74–78.
12. Patel BG, Gallo K, Cherullo EE, Chow AK. Content analysis of ACGME accredited. *Urol Residency Program Webpages*. 2020;138:11–15.
13. Zuo KJ, Retrouvey H, Wanzel KR. Factors that affect medical students' perception and impression of a plastic surgery program: the role of elective rotations and interviews. *Ann Plast Surg*. 2019;82:224–228.
14. Nikonow TN, Lyon TD, Jackman SV, Averch TD. Survey of applicant experience and cost in the urology match: opportunities for reform. *J Urol*. 2015;194:1063–1067.