

## The Impact of Coronavirus Disease 2019 on Medical Trainee Career Decisions

**Keywords.** career; COVID-19; fellowship; recruitment; training.

TO THE EDITOR—Despite a modest increase in interest in infectious disease (ID) careers from 2016 to 2020, there remains a significant need to continue building this workforce [1–3]. Medical career path selection is an iterative process through formal educational experiences in medical school and residency [4, 5]. Up to 65% of medical students develop an initial interest in their ultimate field before entering residency, and 70% develop interest in their ultimate field during residency [5]. Factors identified with the pursuit of ID training include mentorship, scholarship, intellectual stimulation, and higher salaries [5]; early ID exposure during residency is also associated with increased entry into the field [6].

There is little known about the impact of current events on interest in ID careers. The coronavirus disease 2019 (COVID-19) pandemic has changed both medical education and society, leading to rapid alterations in the educational and personal experiences of trainees. A recent publication showed an increase in internet searches for ID fellowship training during this time [7]. We aimed to further explore this finding by identifying themes related to the COVID-19 experiences and career path of fourth-year medical students and internal medicine (IM) residents.

A convenience sample of fourth-year medical students (M4s) and IM residents was invited to participate in an open study administered through Qualtrics from December 22, 2020 through January 19, 2021. Written consent was obtained from all survey participants before entry into the survey platform, and the study was approved by the University of South Dakota Institutional Review Board. Participants were recruited through the

DR-ED, Alliance for Academic Internal Medicine, and Infectious Diseases Society of America online discussion forums, institutional emails, Facebook, and Twitter. Respondents (1) who did not consent to participate, (2) were training outside the United States, (3) or were not an M4 or IM resident, or (4) responses considered to be nonhuman based on a reCAPTCHA score <0.5 were excluded. In addition, respondents who did not complete the question regarding the impact of COVID-19 on their specialty choice were excluded. The questionnaire collected basic demographic data, training location, and perceived impact of COVID-19 on their prepandemic and current career aspirations.

Of the 301 initial respondents, 82 (27.2%) were excluded based on the aforementioned criteria. The remaining 219 responses underwent further analysis (Table 1). Respondents were most commonly M4s (151, 68.9%) who learned of the survey through an email from their training program (196, 89.5%). The majority of respondents believed that their community was moderately ( $n = 105$ , 47.9%) or severely ( $n = 87$ , 39.7%) impacted by COVID-19 and that their medical training was moderately ( $n = 126$ , 57.5%) or severely ( $n = 55$ , 25.1%) impacted.

Of the 24 IM-interested M4s, none identified an interest in ID. Five IM residents ( $n = 5$ , 7.4%) identified ID interest; however, 1 of those respondents lost interest in ID. Twenty-two (10.0%) of the respondents reported a change in field related to the pandemic. Several factors had a moderate to strong impact on their decision to change specialty ( $n = 20$ ), including work-life balance ( $n = 11$ , 55%) and exposure to ( $n = 9$ , 45%) and mentorship in ( $n = 8$ , 40%) their new field.

Sixty-five of 210 (31.0%) respondents reported that the pandemic increased interest in other aspects of career choice, including public health ( $n = 12$ , 44.3%), academic medicine ( $n = 10$ , 32.8%), and

direct patient care ( $n = 7$ , 31%). Narrative comments revealed exposure to unrecognized career paths, recognition of the importance of work-life balance, pursuit of nonclinical work due to burnout, and impacts of politics and public perception on medicine as influential in career changes.

The numbers of respondents reporting interest in ID was low, and although we did not observe increased ID interest in this small cohort, we did note an increased interest in public health. Specialty selection is a process evolving over multiple years of training. Therefore, a larger survey may be required to fully examine the impact of COVID-19 on recruitment to the field of ID. Because career decisions are often made early in training, it is also possible that the full impact of experiences with this pandemic may not be felt for several years.

In the interim, this study generates hypotheses that may inform further work in attracting trainees to ID. Consistent with earlier work, participants highlighted several factors impacting their career decisions, including work-life balance, awareness of specific fields, availability of clinical learning opportunities, and mentorship [5]. As we continue to work to increase recruitment in ID, exploration of the details around nonclinical aspects of specialty choice may yield a better understanding of methods to attract trainees to ID, including initiation of recruitment activities earlier in a trainee's career.

### Acknowledgments

**Disclaimer.** The contents of this publication are the sole responsibility of the authors and do not necessarily reflect the views or policies of the Uniformed Services University of the Health Sciences, Brooke Army Medical Center, Walter Reed National Military Medical Center, the U.S. Army Medical Department, the U.S. Army Office of the Surgeon General, the Department of the Army, the Department of the Air Force, the Department of Defense, or the U.S. Government. Mention of organizations does not imply endorsement by the U.S. Government.

**Potential conflicts of interest.** D. M. B., D. A. L., H. C. Y., and A. E. B. are employees of the U.S.

**Table 1. Study Population and Specialty Interest**

Demographic Data	Number (Percent)
<b>Gender</b>	
Female	133 (60.7%)
Male	84 (38.3%)
Decline to state	2 (0.9%)
<b>Race or Ethnicity (More Than 1 Response Allowed)</b>	
American Indian or Alaskan	2 (0.9%)
Asian	48 (21.9%)
Black or African American	14 (6.4%)
Latinx or Hispanic	10 (4.6%)
White	115 (52.5%)
Other	6 (2.7%)
More than 1	24 (11.0%)
Decline to State	4 (1.8%)
<b>Training Status at Time of Survey</b>	
Fourth-year medical student	151 (68.9%)
Categorical IM intern (PGY-1)	21 (9.6%)
Second year IM resident (PGY-2)	21 (9.6%)
Third year IM resident (PGY-3)	26 (11.9%)
<b>Location of Majority of Clinical Training During Pandemic</b>	
Oregon	44 (20.1%)
Missouri	27 (12.3%)
Michigan	21 (9.6%)
Florida	21 (9.6%)
Georgia	19 (8.7%)
Louisiana	19 (8.7%)
New Mexico	13 (5.9%)
Pennsylvania	13 (5.9%)
Other State (AL, AZ, CA, DE, IL, KS, MD, MT, NJ, NY, OK, SD, TN, TX, UT, WA)	42 (19.2%)
<b>Prepandemic Specialty Interest</b>	
<b>Medical Students</b>	
Internal Medicine or Subspecialty	24 (15.9%)
Emergency Medicine	21 (13.9%)
Surgery/Surgery Subspecialty	18 (11.9%)
Obstetrics and Gynecology	14 (9.3%)
Psychiatry	13 (8.6%)
Family Medicine	12 (7.9%)
Pediatrics/Pediatric Subspecialty	12 (7.9%)
More than 1 specialty listed	12 (7.9%)
Other Specialties	25 (16.6%)
<b>Internal Medicine Residents</b>	
Internal Medicine	12 (17.6%)
Cardiology	10 (14.7%)
Hematology and Medical Oncology	6 (8.8%)
Pulmonology and Critical Care Medicine	6 (8.8%)
Hospital Medicine	5 (7.4%)
Infectious Disease	5 (7.4%)
Gastroenterology	5 (7.4%)
Undecided	5 (7.4%)
Other IM Subspecialties	10 (14.7%)
Did not specify	4 (5.9%)
Specialty Choice Changed due to COVID-19	22 (10.0%)

Abbreviations: AL, Alabama; AZ, Arizona; CA, California; COVID-19, coronavirus disease 2019; DE, Delaware; IL, Illinois; IM, internal medicine; KS, Kansas; MD, Maryland; MT, Montana; NJ, New Jersey; NY, New York; OK, Oklahoma; PGY, postgraduate year; SD, South Dakota; TN, Tennessee; TX, Texas; UT, Utah; WA, Washington.

Government. This work was prepared as part of their official duties. Title 17 U.S.C. §105 provides that copyright protection under this title is not available for any work of the U.S. Government. Title 17 U.S.C. §101 defines a U.S. Government work as a work prepared by a military service member or employee of the U.S. Government as part of that person's official duties. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

Jennifer L. Hsu,<sup>1</sup> Erin M. Bonura,<sup>2</sup> Dana M. Blyth,<sup>3</sup> David A. Lindholm,<sup>4,5</sup> Heather C. Yun,<sup>4,5</sup> and Alice E. Barsoumian<sup>4,5</sup>

<sup>1</sup>Department of Internal Medicine, University of South Dakota Sanford School of Medicine, Sioux Falls, South Dakota, USA, <sup>2</sup>Department of Internal Medicine, Oregon Health & Science University, Portland, Oregon, USA, <sup>3</sup>Infectious Disease Service, Walter Reed National Military Medical Center, Bethesda, Maryland, USA, <sup>4</sup>Department of Medicine, Uniformed Services University of the Health Sciences, Bethesda, Maryland, USA, <sup>5</sup>Infectious Disease Service, Brooke Army Medical Center, San Antonio, Texas, USA

## References

1. National Residency Matching Program. Result and data: specialty matching service: 2020 appointment year. Available at: <https://mk0nrmp3oyqui6wqfm.kinstacdn.com/wp-content/uploads/2020/02/Results-and-Data-SMS-2020.pdf>. Accessed 13 July 2020.
2. Moore T, Dembry LM, Saag MS. Sunday in the park with infectious disease: workforce mismatch in a colorful universe of possibilities. *J Infect Dis* **2017**; 216:581–7.
3. Schmitt S, McQuillen DP, Nahass R, et al. Infectious diseases specialty intervention is associated with decreased mortality and lower healthcare costs. *Clin Infect Dis* **2014**; 58:22–8.
4. Krieshok TS, Black MD, McKay RA. Career decision making: the limits of rationality and the abundance of non-conscious processes. *J Vocat Behav* **2009**; 75:275–9.
5. Bonura EM, Lee ES, Ramsey K, Armstrong WS. Factors influencing internal medicine resident choice of infectious diseases or other specialties: a National Cross-Sectional Study. *Clin Infect Dis* **2016**; 63:155–63.
6. Blyth DM, Barsoumian AE, Yun HC. Timing of infectious disease clinical rotation is associated with infectious disease fellowship application. *Open Forum Infect Dis* **2018**; 5:ofy155.
7. Birabakaran M, Smith DM, Wooten D. Internet searches about infectious diseases training during the COVID-19 pandemic. *Open Forum Infect Dis* **2020**. doi: 10.1093/ofid/ofaa305.

Received 31 August 2021; editorial decision 9 October 2021; accepted 20 October 2021; published online XX XX XXXX.

Correspondence: J. L. Hsu, MD, 1400 W. 22nd St., Sioux Falls, South Dakota 57105 ([jennifer.hsu@usd.edu](mailto:jennifer.hsu@usd.edu)).

## Open Forum Infectious Diseases® 2021

Published by Oxford University Press on behalf of Infectious Diseases Society of America 2021. This work is written by(a) US Government employee(s) and is in the public domain in the US. <https://doi.org/10.1093/ofid/ofab523>