

Fauci effect? When the heart is in the right place, but reality is not

Jorge Cervantes 

Department of Medical Education, Paul L. Foster School of Medicine, Texas Tech University Health Sciences Center at El Paso, El Paso, Texas, USA

Correspondence to

Dr Jorge Cervantes, Texas Tech University Health Sciences Center El Paso Paul L. Foster School of Medicine, El Paso, TX 79905-2709, USA;

jorge.cervantes@ttuhsc.edu

Accepted 11 May 2021

The 'Fauci Effect' is the terminology for the phenomenon of an increased number of applicants to medical school this year, attributed to the impact of Dr Anthony Fauci's performance in the control of the COVID-19 pandemic.

Society, as a whole, has become aware of the challenges that the healthcare workforce worldwide is dealing with during this pandemic, and people are seeing the pain and suffering of those who deal with COVID-19. This has ignited the desire and motivation in applicants who were thinking about a career in medicine. Dr Fauci has been an inspiring and a trusted figure during the pandemic, and now many people want to make a difference similar to what Dr Fauci is doing. Whether directly triggered by Dr Fauci or not, the increase in applications could be a result of people becoming informed of what is currently happening in the world.

Anthony Fauci began his fellowship at the National Institutes of Health (NIH) in 1966, where he completed his training in infectious diseases (ID) and in allergy/immunology. He became a leading expert on HIV/AIDS during the following decades, and became President of the American Federation for Medical Research from 1980 to 1981. In 1984, he was appointed to be the fifth Director of the National Institute of Allergy and Infectious Diseases. Dr Fauci has been an icon for physicians, scientists and other public health leaders because he represents a voice of reason during a time when there is so much misinformation regarding science and medicine. Physicians everywhere aspire to use science to advance the health of their patients, and Dr Fauci's example has been extraordinary in terms of his clarity, grace, and expertise.

According to the Association of American Medical Colleges, the number of students applying to enter medical school in 2021 is up to 18% from this time last year. In some places, like Stanford University School of Medicine, an increase as high as 50% in medical school applications has been observed.¹ This is not the first time that increases in medical school applications have been observed. These phases usually occur during situations when the economy or society may be struggling, or when popular culture, such as television, puts the healthcare industry in the spotlight. It is certainly possible that this increase may not be related with Dr Fauci's presence in the media during the pandemic. Considering

practically all admission processes and interviews have been conducted virtually this year, without requiring travel and related costs, it has become easier or at least more accessible for people to apply to medical school.

This is beneficial for medical schools as an increased number of applications also enable the admission committees to evaluate an increased number of non-traditional applicants which may bring uniqueness to a medical class in how they approach medicine and in how they connect with patients as well. Traditional applicants are rewarded for achieving high grade point averages and Medical College Admissions Test (MCAT) scores.² A more holistic admission process, with less emphasis on MCAT performance when making admission decisions, has been widely adopted, given the importance of a diverse physician workforce to better address changing societal needs.³ The current pandemic has presented the need to include new selection measures and changes to the application process, which may have the potential to actually increase opportunities for a more diverse pool of applicants,⁴ including those recently motivated to pursue a career in medicine.

As applicants to medical school increase, the number of medical school spots available may not be able to keep pace. Medical schools, tightly regulated by various national accrediting boards, have to justify class size increases with costly faculty, staffing and resource expansions, not simply based on a growing application pool. Furthermore, a higher number of medical school graduates will not be able to practice medicine if they are unable to get accepted into a residency program. Residency training positions have expanded at a rate of just 1% a year.⁵ Graduate medical education (GME) programs are mainly government funded, so if the number of funded, accredited programs is not sufficient, they simply cannot enroll more students. The net balance is that more students interested in medicine do not necessarily translate into more practicing physicians. Nevertheless, some actions have been taken to counteract this situation. The Institute of Medicine formed a Committee on the Governance and Financing of GME to review the financing and governance of GME and to make recommendations for improving it.⁶ Main conclusions reached by this committee were that forecasts of future physician shortages are variable and



© American Federation for Medical Research 2021. No commercial re-use. See rights and permissions. Published by BMJ.

To cite: Cervantes J. *J Investig Med* 2021;**69**:951–953.

unreliable, that increasing the number of physicians would not solve specialty and geographic maldistribution, and most notably, that increasing Medicare funding was not essential for increasing the physician workforce.⁶ Fortunately, GME is also supported by private sources, although the significance of private funding may be difficult to quantify.⁷ Limitations on government-funded residency slots have been mitigated by the willingness of hospitals to fund additional slots, and most importantly, to fully fund subspecialty slots, as the Centers for Medicare & Medicaid Services does not pay the full cost of a postresidency fellowship.⁸

A dramatic growth in medical science, especially in ID, began during the golden years of the NIH funding in the 1960s, when support for the biomedical research community seemed unlimited. Such plentifulness of research funds induced a strong momentum that prompted remarkable research advances.⁹ During the 21st century, however, fiscal constraints have limited the accessibility of research and development of new ideas, hobbling the field of ID as well as others.⁹

To these new budget realities, the continuous emergence and re-emergence of ID, including COVID-19, poses new menacing additional challenges.⁹⁻¹¹ Technical advances in genomics and proteomics, robotics, computer modeling, molecular epidemiology, genetic manipulation, and informatics continue yielding new and important knowledge on disease pathogenesis, host immunity, and disease transmission.⁹ Opposing these advances, a decline in the number of ID specialists has been observed in the USA in the last few years.¹²⁻¹⁴ Despite the general shortage of residency slots,⁵ many ID fellowships offered were not filled during the latest National Resident Matching Program.¹⁵ As this specialty has a perpetual association with research,¹¹ difficulties in the transition from early-stage investigators to research independence impede the pathways for physician-scientists.

Given the advances in medicine and technology, the 21st century is an excellent time to be a physician-scientist.¹⁶ Aspiring to become one though faces many challenges, from lack of role models, duration of training to large student loan debts.¹⁶ Several recommendations designed to increase entry into the physician-scientist pipeline have been proposed.¹⁷ These include facilitating the recruitment of international physician-scientists, and retention of members from diverse populations as physician-scientists through wide-scale implementation of programs, as well as enhancing undergraduate and postgraduate research opportunities for trainees who do not matriculate into MD/PhD programs.¹⁷

ID specialists and physician-scientists, like Dr Fauci, proven to be crucial in the current COVID-19 pandemic, are still a permanent and ongoing need given the continuous emergence of antibiotic-resistant microbes.¹⁴ Increasing the ID workforce would bring benefits beyond the field of ID and antimicrobial treatments, as it will contribute to advancements in cancer immunotherapies, inflammatory syndromes, and autoimmune diseases as well.¹⁸ Hence, government and medical societies need to find ways to expand the ID physician-scientist workforce.¹¹ This should include funding mechanisms to encourage talented junior investigators. Helping propel

the careers of these individuals will have an enormous impact in the application of new scientific knowledge to human diseases.

EDITOR IN CHIEF'S COMMENTARY: RICHARD W MCCALLUM, MD

Whether directly triggered by Dr Fauci or not, the increase in applications could be a result of people becoming more aware of the challenges that the health-care workforce worldwide is dealing with during this pandemic. This deficiency is especially apparent in the lack of practicing ID specialists, physicians with the skill set to identify and treat infectious pandemics like the world is currently facing. Unfortunately, a higher number of medical school graduates will not be able to practice medicine if they are unable to get accepted into a residency program, which has expanded at a rate of just 1% a year. Budget constraints for biomedical research, and a decline in the number of practicing ID specialists in the USA pose additional challenges. ID specialists and physician-scientists, proven to be crucial in the current COVID-19 pandemic, remain to play pivotal roles given the continuous emergence of new strains and pathogens and re-emergence of old diseases.

Acknowledgements Special thanks for Dr Cynthia Perry (PLFSOM, TTUHSC-EP) for editing the manuscript.

Contributors JC wrote the manuscript.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Not required.

Provenance and peer review Not commissioned; internally peer reviewed.

ORCID iD

Jorge Cervantes <http://orcid.org/0000-0002-4359-5951>

REFERENCES

- Marcus J. 'Fauci Effect' drives record number of medical school applications. npr Special Series The Coronavirus Crisis, 2020.
- Schwartzstein RM. Leveraging the medical school admissions process to foster a smart, humanistic, and diverse physician workforce. *Acad Med* 2020;95:333-5.
- Thomas BR, Dockter N. Affirmative action and holistic review in medical school admissions: where we have been and where we are going. *Acad Med* 2019;94:473-6.
- O'Connell RL, Kemp MT, Alam HB. The potential impact of COVID-19 on the medical school application. *J Med Educ Curric Dev* 2020;7:238212052094066.
- Kalter L. U.S. medical school enrollment rises 30%. *AAMC New* 2019.
- Wilensky GR, Berwick DM. Reforming the financing and governance of GME. *N Engl J Med* 2014;371:792-3.
- Eden J, Berwick D, Wilensky G, eds. *Graduate Medical Education That Meets the Nation's Health Needs*. Washington, DC, 2014.
- Grover A. Understanding GME financing. *Acad Med* 2013;88:1788.
- Fauci AS. The global challenge of infectious diseases: the evolving role of the National Institutes of health in basic and clinical research. *Nat Immunol* 2005;6:743-7.
- Fauci AS, Touchette NA, Folkers GK. Emerging infectious diseases: a 10-year perspective from the National Institute of allergy and infectious diseases. *Emerg Infect Dis* 2005;11:519-25.
- Collins JM, Wallender EK, Woodworth MH. Improving the infectious diseases physician scientist workforce from the view of junior Investigators: vision, transparency, and reproducibility. *Clin Infect Dis* 2020;70:162-8.
- Bonura EM, Armstrong WS. Increasing subspecialization in the field of infectious diseases: evaluating challenges and strategies to move forward. *J Infect Dis* 2017;216:S594-9.

- 13 Donskey CJ. Never let a crisis go to waste: recruiting the next generation of infectious diseases physicians. *Pathog Immun* 2017;2:270–3.
- 14 Cervantes J. The future of infectious diseases education. *Med Sci Educ* 2020:1783–5.
- 15 Program. NRM. *NRMP results and data specialties matching service*, 2021.
- 16 Brown NJ. Developing physician-scientists. *Circ Res* 2018;123:645–7.
- 17 Salata RA, Geraci MW, Rockey DC, *et al.* U.S. Physician-Scientist workforce in the 21st century: recommendations to attract and sustain the pipeline. *Acad Med* 2018;93:565–73.
- 18 Bruns HA, Deaver J, Justement LB. Out of the curricular shadows: revolutionizing undergraduate immunology education. *Front Immunol* 2019;10:2446.