

# Recruitment into Pediatric Pulmonary Fellowship Programs

## The Bigger the Better?

Pnina Weiss, M.D., M.H.P.E.

Department of Pediatrics, Yale School of Medicine, New Haven, Connecticut

Concerns have been raised about the future of the pediatric pulmonology workforce, including inadequate recruitment, an aging physician population, maldistribution of providers, and decreasing numbers of physician scientists (1–3). For the 2023 appointment year, 48% of pediatric pulmonology programs went unfilled in the National Resident Matching Program (NRMP) (4). According to the American Board of Pediatrics (ABP), there is a wide difference among U.S. states in the numbers of pediatric pulmonologists, ranging from as high as 7.95 per 100,000 children to zero in many states (3). Inadequate recruitment into fellowship, along with the decreasing numbers of physician scientists, has the potential to adversely impact research and advancement in the care of children with respiratory diseases (2).

These concerning data highlight the importance of maintaining the integrity of the pipeline in pediatric pulmonology, including recruitment into fellowship, along with training and its relationship to where fellows go and what they do after graduation. The article in this issue of

*ATS Scholar* by Esther and colleagues (5) makes an important contribution to our understanding of these complex relationships. The authors examined data from the NRMP for pediatric pulmonology from 2010 to 2022 in relation to program size: small (one position per year), medium (two positions per year), and large (at least three positions per year). When comparing data from 2010–2018 versus 2019–2022, they showed an increase in the number of programs and positions offered per year. Importantly, there was an increase in the number of positions filled in the match that could be attributed solely to an increase in aggregate positions from large programs. When compared with small programs (42%), the match rate increased with the size of the program (medium, 69%; large, 96%). The recent match rate in small programs was 42%, compared with 52% previously ( $P=0.07$ ). The authors also found a positive correlation between the number of pediatric pulmonologists and the number of fellowship positions matched per 100,000 children during

---

This article is open access and distributed under the terms of the Creative Commons Attribution Non-Commercial No Derivatives License 4.0. For commercial usage and reprints, please e-mail Diane Gern.

ATS Scholar Vol 4, Iss 3, pp 250–253, 2023  
Copyright © 2023 by the American Thoracic Society  
DOI: 10.34197/ats-scholar.2023-0091ED

the previous 5 years in each state with a pediatric pulmonology training program. When interpreting the data from Esther and colleagues, it is important to understand that it represents pediatric pulmonology programs that participated in the match during that cycle, which does not account for all trainees accepted to programs who start a fellowship. That gap, which can be determined by comparing NRMP with ABP data, can be quite sizable, averaging approximately 16 of the 60 (26%) who actually became first-year fellows during the previous 9 years (6). The effects of program size on training and correlation to the future workforce would be strengthened by using such data from the ABP or Accreditation Council for Graduate Medical Education (ACGME). Recently, such data were posted on the ABP website and include filled positions for fellows by academic year, program, and state (<https://www.abp.org/dashboards/pediatric-program-map-and-listing>) (7). However, the study by Esther and colleagues makes important contributions, especially when looking through the lens of successful recruitment through the match. The study by Esther and colleagues documents the increase in the number of programs participating in the match, which is a double-edged sword. Although it demonstrates the growth of pediatric pulmonology education, it also increases the competition among programs for the limited pool of applicants. Larger program size was associated with more successful recruiting through the match, which most likely does translate into a greater proportion ultimately being trained in the largest programs. Although this was not statistically significant, the data suggest that it may be at the expense of small programs. Why are large programs more successful at recruiting through the match? Large

programs may be more financially secure and have access to more resources. In subspecialty fellowship programs, programs with at least seven fellows and  $\leq 25\%$  unfilled positions in the match were less likely to be perceived as financially insecure (8). Larger pediatric pulmonary fellowships are more likely to have a specific research curriculum and less likely to report a lack of expertise on the scholarly oversight committee (9). Qualitative studies would be useful to determine if these factors or others such as camaraderie and social interactions are most important.

Is the shift to large programs a problem? In larger pediatric pulmonology programs, fellows are more likely to pursue a position in research after graduation (9), which is important when considering the decrease in the number of physician scientists. Given the large expense associated with fellowship program administration and fellow salaries in the harsh financial climate of hospitals, perhaps it would be beneficial to share resources and centralize into fewer programs. However, that ignores the importance of the joy and meaning in work that faculty at smaller programs may feel in training the next generation in their subspecialty, which is important in reducing burnout and enhancing engagement (10). Despite the differences in resources, there was no difference between large and small pediatric pulmonology programs with regard to scholarly productivity measured by peer-reviewed publications or grant applications, and, in fact, small programs were more likely to have  $>75\%$  of their fellows present their work at a national or international meeting (9). The potential of worsening the disparity in access to care between states by centralizing training into a few metropolitan areas is important; however, that association needs to be further studied.

Enhancing recruitment is an important strategy to enhance the pipeline. However, suggesting that increasing the number of large programs would enhance recruitment into the subspecialty is based on no evidence. In fact, in the work by Nelson and colleagues, the decision to pursue pediatric pulmonology occurs early in the second year of pediatric residency, so strategies to enhance recruitment should occur more proximally in the educational pipeline, such as early exposure in residency or in the preclinical medical school curriculum (11, 12). Efforts to decrease the disparities in compensation between adult and pediatric providers (13) and reduce debt may help enhance recruitment of medical students into pediatric residencies (12). Decreasing the duration of fellowship to 2 years (from its present 3 years) has also been proposed, but even though it would reduce trainee debt (14) and the cost of training, it is unclear whether it would actually increase recruitment into the subspecialty.

Given the growth of fellowship training programs, which continues to outstrip the number of applicants, it is important to

discuss these issues at the subspecialty level because regulation of the number of programs is outside the purview of the Accreditation Council for Graduate Medical Education. National initiatives to help define the population needs of pediatric subspecialists are under way. The ABP, partnering with the Cecil G. Sheps Center for Health Services Research at the University of North Carolina at Chapel Hill, has developed a workforce model for pediatric subspecialties to predict future workforce needs, including changes in the training pipeline. Additionally, the National Academies of Sciences, Engineering and Medicine's consensus study on the pediatric subspecialty workforce and its impact on child health and well-being should be released soon. The study by Esther and colleagues adds an important element that should be incorporated into discussions about the training pipeline in pediatric pulmonology and its relationship to the workforce to optimally serve the needs of children.

**Author disclosures are available with the text of this article at [www.atsjournals.org](http://www.atsjournals.org).**

---

## REFERENCES

1. Oermann CM, Lahiri T, Peterson-Carmichael SL, Weiss P. The history of workforce concerns in pediatric pulmonary medicine. *Pediatr Pulmonol* 2023;58:683–689.
2. Ferkol T, Zeitlin P, Abman S, Blaisdell CJ, O'Brodovich H. NHLBI training workshop report: the vanishing pediatric pulmonary investigator and recommendations for recovery. *Pediatr Pulmonol* 2010;45:25–33.
3. American Board of Pediatrics. Pediatric subspecialty US state and country maps. 2023 [updated 2023 May 17; accessed 2023 Jul 28]. Available from: <https://www.abp.org/dashboards/pediatric-subspecialty-us-state-and-county-maps>.
4. National Resident Match Program. Fellowship match data & reports. 2023 [accessed 2023 Jul 28]. Available from: <https://www.nrmp.org/match-data-analytics/fellowship-data-reports/>.
5. Esther CR Jr, Rama JA, Nelson BA. Pediatric pulmonary fellowship program size effect on recruitment and workforce distribution. *ATS Scholar* 2023;4:311–319.

6. The American Board of Pediatrics. Comparison of ABP data to the NRMP match data. 2023 [updated 2023 May 17; accessed 2023 Jul 28]. Available from: <https://www.abp.org/content/comparison-abp-data-nrmp-match-data>.
7. The American Board of Pediatrics. Pediatric program map and listing. 2023 [updated 2023 May 17; accessed 2023 Jul 28]. Available from: <https://www.abp.org/dashboards/pediatric-program-map-and-listing>.
8. Weiss P, Myers AL, McGann KA, Mason KE, Kesselheim JC, Fleming G, *et al*. Funding sources and perceived financial insecurity in pediatric subspecialty fellowship programs. *Acad Pediatr* 2019; 19:815–821.
9. Weiss P, Rama J, Gerber LM, Qiu Y, Li ST, Duncan JG, *et al*. Scholarly activity training in pediatric pulmonology fellowship programs. *Pediatr Pulmonol* 2022;57:982–990.
10. Shanafelt TD, Noseworthy JH. Executive leadership and physician well-being: nine organizational strategies to promote engagement and reduce burnout. *Mayo Clin Proc* 2017;92:129–146.
11. Nelson BA, Rama JA, Weiss P, Hinkle LJ. *How* and *why* trainees choose a career in pediatric pulmonology. A qualitative study. *ATS Scholar* 2020;1:372–383.
12. Azok JG, O'Donnell KA, Long ME, Wang HC, Crook T, Pogemiller MI, *et al*. Factors influencing medical students' career choice to pursue pediatrics. *J Pediatr* [online ahead of print] 27 May 2023; DOI: 10.1016/j.jpeds.2023.113525.
13. Catenaccio E, Rochlin JM, Simon HK. Differences in lifetime earning potential between pediatric and adult physicians. *Pediatrics* 2021;148:e2021051194.
14. Catenaccio E, Rochlin JM, Simon HK. Differences in lifetime earning potential for pediatric subspecialists. *Pediatrics* 2021;147:e202002771.