NEJM Catalyst | Innovations in Care Delivery

COMMENTARY

Unique Risks and Solutions for Equitable Advancement during the Covid-19 Pandemic: Early Experience from Frontline Physicians in Academic Medicine

Tracy E. Madsen, MD, ScM, Valerie Dobiesz, MD, MPH, Devjani Das, MD, Kinjal Sethuraman, MD, MPH, Pooja Agrawal, MD, MPH, Amy Zeidan, MD, Elizabeth Goldberg, MD, ScM, Basmah Safdar, MD, Michelle D. Lall, MD, MHS

Vol. No. | July 20, 2020

DOI: 10.1056/CAT.20.0268

The spread of the Covid-19 pandemic across the United States has taken a toll on frontline physicians but with unique challenges for academic physicians and distinct differences based on gender. In addition to efforts in gearing up to work on the frontline, staying abreast of rapidly evolving protocols and literature, developing novel decontamination routines, and advancing academic careers, many women are managing a dramatic increase in responsibility at home and in the community in an era of social distancing. The impact of Covid-19 is differentially affecting physicians, both women and men, who are caregivers in their homes. Further, gender-based inequities, inherent and pervasive in academic medicine, are being compounded by Covid-19–related challenges. Here, we address the impact of Covid-19 on academic frontline physicians and, through a gender lens, suggest strategies to mitigate the burden that frontline women physicians are facing during Covid-19.

In addition to the risks to physical and mental health, academic physicians working on the frontlines are facing added, unique challenges due to Covid-19, such as maintaining academic productivity, educating trainees, and keeping up with administrative responsibilities despite increased stress in the clinical environment. Such challenges must be considered through a gender lens, as frontline women physicians are bearing a disproportionate degree of Covid-19 related

burdens. Not only are frontline women physicians on the frontlines at work, but they are more often on the "frontline" at home as well — serving as the primary caregivers for children or aging parents during the pandemic — and, as a result, are experiencing major barriers to academic productivity. Further, long-standing inequities in the workforce of frontline physicians in academics have resulted in a system where women are paid less and are less likely to advance through the ranks of academic medicine.[1,2]

Highlighting pre-existing inequities in the academic medicine workforce is critical to understanding the differential impact of Covid-19 on physicians by gender. For example, women are more likely to hold educational roles as opposed to funded research roles or administrative roles,[3] the latter yielding more protected time from clinical duties. As a result, faculty in education leadership positions (often women) have higher clinical workloads, subsequent higher exposure to infections, and can therefore, in this catch-22 cycle, devote less time to pursue opportunities associated with academic work. Furthermore, because women physicians do not hold the majority of executive leadership positions, they are less likely to get asked or chosen for even temporary leadership positions during a health care crisis, and they are often not in positions to advocate for new policies to break these catch-22 cycles. For physicians facing pay cuts due to Covid-19, women and more junior faculty may be disproportionately impacted given they have lower baseline salaries.[1,2] Here, we explore these areas of concern in greater detail.

Risks to the Health of Frontline Workers

Health risks for frontline workers are numerous, and women make up 70% of the total health care workforce globally, including nurses and non-physicians. Although recent CDC data show that 73% of the health care workers infected with Covid-19 were female, there is no current data on infection rates in physicians by gender.[4,5] Further, though infection rates by gender among frontline physicians have not been published, the length of exposure and proximity to patients with Covid-19 are the primary contributors to a physicians' risk of infection. Though men make up a greater proportion of the physician workforce, women are disproportionately likely to hold junior faculty positions, which often include more clinical hours and thus higher risks of direct exposure to Covid-19. In addition, there are known issues with respirator and personal protective equipment (PPE) fit for women, which further increases the risk of infection.[6] As we can only speculate regarding potential gender differences in either individual- or population-level infection rates for frontline physicians, future reports of Covid-19 infections and deaths among health care workers should be reported by job title (i.e., physicians, nurses, technicians), gender, race, and ethnicity.

Women and men who are primary caregivers for children or older family members are likely disproportionally burdened by protecting their families from infection, and we know that the majority of primary caregivers are women.[7] Not only do shortages of PPE increase the risks to the physical health and psychological well-being of physicians, but following risks of exposures at work, they must then choose how to best protect their families from possible infection. Data regarding effective disease prevention within family units is lacking, especially for asymptomatic health care workers. While the decision to self-isolate after shifts carries significant psychological burden for both physicians and their family members,[8] physicians who are the primary caregivers for their children or other family members often do not have the option to self-isolate, further adding to

the physical and psychological risks for all involved. Although it is too soon to know whether the psychological distress experienced by health care workers during the initial wave of the Covid-19 outbreak will persist, data from the SARS outbreak is concerning. These data demonstrated that health care workers who are SARS survivors showed significantly higher stress levels one year after the outbreak and had higher depression, anxiety, and posttraumatic symptoms than non–health care worker survivors of infection.[9] Emerging data show that not only are the psychological impacts of Covid-19 more pronounced among women in the general population,[10] but even more so on women health care workers.[11] Studies looking at the impact on women physicians specifically have not been published to date, but will be critical in order to assess the long-term psychological impact of Covid-19. Finally, dual physician families face unique challenges due to unpredictable clinical schedules in the setting of Covid-19 surges as well as an elevated risk of infection for both partners.

> *"Emerging data show that not only are the psychological impacts of Covid-19 more pronounced among women in the general population, but even more so on women health care workers."*

Physicians who are pregnant or nursing face sex-specific health care risks as well. Little data exist on morbidity and mortality for pregnant women with Covid-19, and concerns for nursing mothers include potential infectious risks around pumping in the hospital and the possibility of needing to self-isolate from nursing infants. Because this is a novel virus and our understanding of its impacts continue to evolve, there has been no unified policy to guide pregnant physicians on the frontlines. Early in its course, it was thought that the impact on pregnancies was minimal, leaving many pregnant women working as usual. Only now are we starting to gather that there could be a pro-thrombotic impact on the placenta.[12] Other early data suggest that infected women, especially those with pneumonia or severe maternal illness, may have increased risk of preterm labor, premature rupture of membranes, preterm birth, preeclampsia, and cesarean delivery for fetal distress,[13,14] which has obvious implications for pregnant physicians on the frontlines. Few policies exist to mitigate work exposure for women who are pregnant or nursing, though evolving data points to the need to direct pregnant physicians away from the direct care of Covid-19–positive patients when possible.[15] Other countries have instituted protections such as allocating pregnant health care workers to patients and duties with reduced exposure to Covid-19 and offering pregnant staff the choice of whether to work in direct patient-facing roles.[16] Based on evolving data in this area, we suggest that institutions take all precautions necessary to reduce risk to pregnant physicians, including giving pregnant physicians a choice to avoid working in high-risk areas defined by a high prevalence of Covid-19–positive patients. As more evidence about how to reduce risk of transmission and the safety of pregnant women on the frontlines is established, employers could recommend pregnant women return to clinical interactions with patients with suspected Covid-19. Finally, an increase in gender-based violence in the setting of social isolation poses a major health threat to women: physician and non-physician alike.[17]

Domestic Roles and Responsibilities During Covid-19

Many women physicians are disproportionately managing the dramatic changes in the lives of families and children due to Covid-19. For example, for many families with young children, utilizing outside childcare facilities and home childcare professionals is no longer an option due to the need for social distancing or factors such as stigmatization of frontline health care workers due to the perceived risk of Covid-19. It is well known that women physicians provide more childcare and spend more time on parenting and domestic tasks than their male counterparts,[7] responsibilities that have been exacerbated due to stay-at-home orders and pandemic-related closures. Families with school-aged children are now tasked with homeschooling, which includes not only keeping up on daily academic work but also keeping track of virtual learning schedules and helping children to adapt to distance learning.

In addition, challenges for physicians caring for aging parents include increased concern for the health of aging parents, worry about infecting older family members who may live with them, and not being able to visit aging parents due to the potential for disease transmission. Further, some physicians are expected to help manage the medical care of their parents; navigating this from afar to reduce infection risk places an undue burden on both the aging parent as well as the physician caregivers.

Finally, tasks that are typically outsourced can no longer be outsourced, further adding to the burden for physicians. These may include cooking, meal planning, grocery shopping, laundry, house cleaning, assisting with schoolwork, and managing children's extracurricular activities. For women physicians working on the frontline and continuing academic careers, the Covid-19 pandemic has given literal meaning to *doing it all*. While many of these issues place increased burden on physicians, the increasing demands on the partners of physicians is also substantial and may add to increased stress on families.

> *"For women physicians working on the frontline and continuing academic careers, the Covid-19 pandemic has given literal meaning to doing it all."*

Academic Productivity and Career Advancement

Despite new challenges in both the home and work environment, the role of academic physicians and their responsibilities in research, administration, and education remain, and the Covid-19 pandemic has resulted in the creation of countless new opportunities to contribute to the advancement of science and education.

These roles and opportunities, however, create additional challenges for front-line women physicians, who often are also serving as caregivers at home. Whether one is caring for young children, aging parents, or partners, the combination of increasing clinical challenges with new caregiving responsibilities is creating major barriers for continued academic productivity including

reduced work hours and frequent interruptions. New data, though early, support evidence for a disproportionate decrease in submissions from female authors, especially those in first author roles and in manuscripts pertaining to Covid-19.[18-20] For many women, the first sacrifice in times of difficulty is their personal health and their professional work. The impact of this will likely be studied in hindsight by gender equity researchers. Similar challenges will likely arise for physicians with personal health issues or who become infected with Covid-19. For many younger physicians and particularly women working toward academic promotion, even temporary changes in productivity and momentum have the potential to have significant detrimental effects on career trajectories. Additionally, many schools have already declared they will remain closed for in-person learning in the fall and expect all children with any signs of illness to remain home. Because women continue to bear the majority of home and childrearing responsibilities, we anticipate that decreased productivity due to school and daycare absences will continue for the foreseeable future.

As a result of cancelled academic conferences and meetings, many faculty have lost speaking and in-person networking opportunities, both locally and nationally, that are critical for promotion and career advancement. In addition, many non–Covid-19 research projects and clinical trials have been put on hold in the U.S. and elsewhere,[21] delaying scientific inquiry and risking future funding. Further, the rapid creation of new Covid-19 task forces and leadership roles are at risk of being affected by the same gender biases that have consistently affected our workforce, with a potential to exclude women from such opportunities. In sum, these factors have the potential to substantially widen the gender disparities in promotion and advancement that women have faced for decades.

Potential Solutions and Conclusions

Academic medicine has well-documented challenges for women (and caregivers) in the workforce that are being exacerbated by Covid-19. When addressing Covid-19–related challenges, it is essential to include primary caregivers in high-level decision-making processes to address such disparities. Further, there are many strategies that could be implemented to reduce health risks, mitigate the effects of lost productivity, and support physicians caring for their families (Table 1). While some of these recommendations may be applicable to both women and men, the recommendations chosen include those that will help mitigate worsening gender disparities in academic medicine.

To reduce health risks to physicians and families, in addition to providing adequate PPE (including sizes that fit both women and men), practices such as providing scrubs and changing/showering areas for post-shift decontamination as well as frequent testing of physicians are needed. It is also critical at this time to provide a clean area in which nursing physicians may pump and store their breast milk in a sterile environment.[22]

To relieve some of the burden from increased responsibilities at home, and to allow women to be active leaders in their departments and institutions, flexibility in meeting times should be encouraged to avoid conflict with homeschooling or childcare responsibilities. Institutions should also work to provide alternative childcare options for their staff.

Table 1.

CHALLENGES	STRATEGIES
Risks to the Health of Frontline Workers	
The highly transmissible nature of the virus puts families of physicians at risk.	Provide adequate personal protective equipment (PPE), with options for appropriate sizes for both women and men Provide access to a post-shift decontamination area in hospital (or in proximity) with: • A shower • Scrub machine or hospital scrub laundry service • Frequently cleaned locker room • Secure decontaminated area to store personal belongings in proximity Provide off-shift housing options for physicians who may need to isolate themselves from family members
The dynamic situation of evolving knowledge and administrative guidelines around clinical protocols during the pandemic contributes to a greater workload and work stress.	Reassurance and frequent open communications from leadership/administration to address rationale and change in policies in real time • Regularly scheduled virtual townhall meetings with recordings available to review for those who are unable to attend due to childcare or other commitments • Daily email updates with new information highlighted • Regular feedback mechanisms for those directly engaged on the frontlines
High stress of an unpredictable pandemic, lack of good treatment options, scarcity of resources, high clinical acuity, and personal risk can challenge the wellbeing of even the more resilient physicians.	Support for physician mental health, resilience, and post-traumatic stress: • Clean and well-stocked faculty break rooms with snacks/coffee/water • Adequate clinical coverage to support faculty who need time to adapt to new information • Forums to encourage peer support (virtual support groups, open and closed group chats through social media, acknowledgement of the stress of new roles and environments) • Increased vigilance for burnout from peers and leadership with frequent check-ins • Professional help encouraged for all (efforts to make mental health services available during non-business hours (i.e., opt out 1:1 sessions for all faculty) Encourage and develop models for medical or personal leave when needed
For physicians at higher risk for complications of Covid-19 (pregnant physicians, physicians who are immunocompromised, physicians in older age groups), implications of infection are not fully understood.	Give physicians shift flexibility to avoid high-risk exposures (e.g., intubation) Consider changing to telemedicine shifts Additional administrative or education time Flexibility to work in "cold" zones of the ED
Lactating physicians need a secure and clean place to pump.*	Designated lactation room with refrigeration, frequent surface disinfection, and access to soap and water for hand hygiene Designated break times to allow for appropriate doffing and time to pump
Academic Productivity and Career Advancement	
While other specialties may defer elective procedures or routine clinic visits allowing physicians more time to be academically productive, frontline academic physicians may experience a decline in scholarly productivity with a need to rapidly adapt to a new clinical environment, changing protocols, and similar or even increased clinical volume in response to a pandemic.	University leadership should recognize and adapt promotion and compensation guidelines to support frontline academicians. • Support those who are ready for promotion to continue forward in the process • Pause the clock for tenure requirement when necessary, similar to during Family and Medical Leave Act • Acknowledge the important role clinical availability and efforts play during a pandemic • Annual audits of promotions by gender to ensure equitable practices
With the additional childcare and clinical obligations, research may be sidelined, and faculty may have additional stress maintaining their research staff.	Bridge funding for grants Extend grant deadlines Facilitate team research with non-clinical academicians (e.g. PhDs or faculty on sabbatical) for grant writing and manuscripts

To support the academic careers of women physicians during this unprecedented time, it is paramount to understand the tasks competing for physicians' time and mental energy. Potential solutions include offering bridge funding and grant extensions for researchers and forming collaborations between clinical and non-clinical faculty to help keep projects moving forward while clinicians are needed on the front lines. Women should be equitably considered and actively sponsored for new leadership roles. With regard to career advancement, the potential adverse effects of the Covid-19 pandemic should be considered. Although stop-the-clock policies have been implemented in some institutions, it would be preferable to continue the promotions process for those who are qualified to go forward, but also take into account decreased productivity during this time period for others. It is critical to not widen pre-existing disparities in promotion and rank.

> *"Although stop-the-clock policies have been implemented in some institutions, it would be preferable to continue the promotions process for those who are qualified to go forward, but also take into account decreased productivity during this time period for others. It is critical to not widen pre-existing disparities in promotion and rank."*

The current Covid-19 pandemic has created many career challenges for frontline academic physicians. Using innovative solutions to support academic careers and prevent exacerbating existing gender inequities in the system, steps must be taken to ensure all faculty have adequate support during this time. A diverse group of voices should be sought to design strategies and solutions to best support all academic physicians working on the frontline.

Tracy E. Madsen, MD, ScM
Assistant Professor of Emergency Medicine, Alpert Medical School of Brown University

Valerie Dobiesz, MD, MPH
Emergency Physician, Brigham and Women's Hospital; Core Faculty, Harvard Humanitarian Initiative

Devjani Das, MD
Columbia Vagelos College of Physicians & Surgeons,

Kinjal Sethuraman, MD, MPH
Assistant Professor, University of Maryland

Pooja Agrawal, MD, MPH
Assistant Professor of Emergency Medicine, Yale University School of Medicine,

Amy Zeidan, MD
Assistant Professor, Emergency Medicine, Emory University School of Medicine,

Elizabeth Goldberg, MD, ScM
Associate Professor of Emergency Medicine and Health Services, Policy and Practice, Alpert Medical School of Brown University

Basmah Safdar, MD
Associate Professor of Emergency Medicine; Yale University School of Medicine,

Michelle D. Lall, MD, MHS
Associate Professor of Emergency Medicine, Emory University

Disclosures: Tracy E. Madsen, Valerie Dobiesz, Devjani Das, Kinjal Sethuraman, Pooja Agrawal, Amy Zeidan, Elizabeth Goldberg, Basmah Safdar and Michelle D. Lall have nothing to disclose.

References

1. Wiler JL, Rounds K, McGowan B, Baird J. Continuation of Gender Disparities in Pay Among Academic Emergency Medicine Physicians. Acad Emerg Med. 2019;26(6):286-92

2. Madsen TE, Linden JAJA, Rounds K. Current Status of Gender and Racial/Ethnic Disparities Among Academic Emergency Medicine Physicians. Acad Emerg Med. 2017;24(6):1182-92

3. Webb EM, Kallianos KG, Vella M. Are Women Disproportionately Represented in Education Compared to Other Roles in Academic Radiology? Acad Radiol.

4. Characteristics of Health Care Personnel with COVID-19 - United States, February 12–April 9, 2020. MMWR Morb Mortal Wkly Rep. 2020;69(6):477-81

5. Gupta AH. Why Women May Face a Greater Risk of Catching Coronovirus. New York Times. March 12, 2020; https://www.nytimes.com/2020/03/12/us/women-coronavirus-greater-risk.html.

6. Flynn MA, Keller B, DeLaney SC. Promotion of alternative-sized personal protective equipment. J Safety Res. 2017;63(6):43-6

7. Jolly S, Griffith KA, DeCastro R, Stewart A, Ubel P, Jagsi R. Gender differences in time spent on parenting and domestic responsibilities by high-achieving young physician-researchers. Ann Intern Med. 2014;160(6):344-53

8. Sun D, Yang D, Li Y. Psychological impact of 2019 novel coronavirus (2019-nCoV) outbreak in health workers in China. Epidemiol Infect.

9. Lee AM, Wong JGWS, McAlonan GM. Stress and psychological distress among SARS survivors 1 year after the outbreak. Can J Psychiatry. 2007;52(6):233-40

10. Liu N, Zhang F, Wei C. Prevalence and predictors of PTSS during COVID-19 outbreak in China hardest-hit areas: Gender differences matter. Psychiatry Res.

11. Kang L, Ma S, Chen M. Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel coronavirus disease outbreak: A cross-sectional study. Brain Behav Immun. 2020;87(6):11-7

12. Baergen RN, Heller DS. Placental Pathology in Covid-19 Positive Mothers: Preliminary Findings. Pediatr Dev Pathol. 2020;23(6):177-80

13. Mullins E, Evans D, Viner RM, O'Brien P, Morris E. Coronavirus in pregnancy and delivery: rapid review. Ultrasound Obstet Gynecol. 2020;55(6):586-92

14. Rasmussen SA, Smulian JC, Lednicky JA, Wen TS, Jamieson DJ. Coronavirus Disease 2019 (COVID-19) and pregnancy: what obstetricians need to know. Am J Obstet Gynecol. 2020;222(6):415-26

15. Ellington S, Strid P, Tong VT. Characteristics of Women of Reproductive Age with Laboratory-Confirmed SARS-CoV-2 Infection by Pregnancy Status - United States, January 22-June 7, 2020. MMWR Morb Mortal Wkly Rep. 2020;69(6):769-75

16. Martin NYB. Pregnant Health Care Workers at Risk for Coronavirus Are Being Force to Keep Working. ProPublica. April 1, 2020. https://www.propublica.org/article/terrified-pregnant-health-care-workers-at-risk-for-coronavirus-are-being-forced-to-keep-working.

17. Bradbury-Jones C, Isham L. The pandemic paradox: The consequences of COVID-19 on domestic violence. J Clin Nurs. 2020;29(6):2047-9

18. Gabster BP, van Daalen K, Dhatt R, Barry M. Challenges for the female academic during the COVID-19 pandemic. Lancet. 2020;395(6):1968-70

19. Andersen JP, Nielsen MWSN, Lewis REJR. Meta-research: is Covid-19 amplifying the authorship gender gap in the medical literature?*arXiv*. 2020;Published June 11, 2020. https://arxiv.org/abs/2005.06303

20. Vincent-Lamarre P, Sugimoto CRLV. The decline of women's research production during the coronavirus pandemic.*Nat. Index*. May 19, 2020. https://www.natureindex.com/news-blog/decline-women-scientist-research-publishing-production-coronavirus-pandemic.

21. Thornton J. Clinical trials suspended in UK to prioritise covid-19 studies and free up staff. BMJ.

22. Haas MRC, Landry A, Joshi N. Breast Practices: Strategies to Support Lactating Emergency Physicians. Ann Emerg Med. 2020;75(6):681-90