



# Cascading Effects of COVID-19 on Women in Cardiology

**D**uring the past several months, we have witnessed the medical, economic, and social devastation wrought by the coronavirus disease 2019 (COVID-19) pandemic. COVID-19 has rapidly transformed our medical education, care delivery, and extraprofessional structures, and this upheaval is threatening to differentially impact the careers of women and men in cardiovascular medicine. Here, we outline the known and potential consequences of COVID-19 on women in cardiology and offer strategies to mitigate this developing amplification of existing sex/gender disparities (Figure).

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## THE SHALLOW PIPELINE

In the United States, although the percentage of women in internal medicine training programs has increased during the last 25 years, among medicine subspecialties, cardiology has had the lowest rates of increase in women enrolled in fellowship training during this period.<sup>1</sup> In a large survey of US medical residents, having a role model was one of the most highly rated professional development needs identified, and women were more likely to negatively perceive the lack of diversity and role modeling in cardiology.<sup>2</sup> With this backdrop, in the fall of 2020, training programs conducted fellowship recruitment virtually because of COVID-19. The important recruitment experiences on which women applicants rely—meeting women faculty and potential mentors, hearing women fellows' and faculty's experiences with pregnancy and early motherhood, learning about program culture toward women—cannot be easily replicated virtually. Graduate medical education restrictions on extramural rotations because of COVID-19 may disproportionately disadvantage those residents and fellows who rely on these experiences for specialty or subspecialty exposure, letters of recommendation, and networking with potential sponsors. Networking and mentoring opportunities for women, such as those that were offered in affinity group lounges at professional meetings prior to COVID-19, have also been difficult to recreate remotely. For a number of reasons, residents and fellows may choose to delay or forgo advanced training pursuits during this time of uncertainty. Each of these barriers may contribute to fewer women in cardiology applicant pools and, therefore, fewer women cardiologists in the future.

## EARLY- AND MID-CAREER INEQUITIES

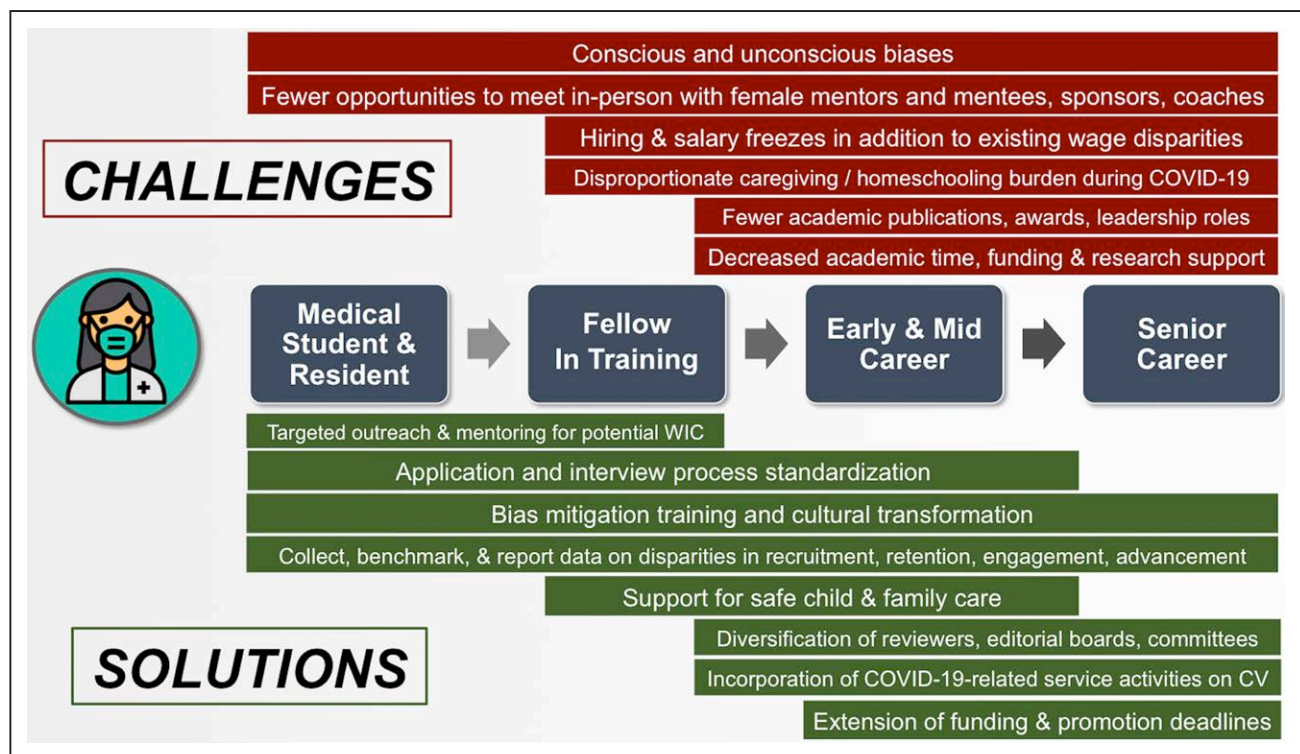
After accounting for productivity and subspecialty, on average women cardiologists earn 7.3% less in salary than their male counterparts. This wage disparity only escalates for women over time as they become senior physicians and can amount to a \$2.5-million pay gap during a 35-year career.<sup>3</sup> The economic disruption triggered by COVID-19 has caused a number of university- and nonuniversity-affiliated

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**Figure.** Challenges to and potential solutions for the advancement of women in cardiology across the career span during COVID-19.

Challenges and solutions are represented as temporally associated with specific career stages. COVID-19 indicates coronavirus disease 2019; CV, curriculum vitae; and WIC, women in cardiology.

institutions across the country to implement layoffs, hiring freezes, and salary freezes. During the pandemic women have lost more jobs than men across most sectors; it is not yet known whether this also extends to women in medicine. Although efforts to preserve sex/gender equity in salary may be instituted at the time of contract signing, women negotiate less often and less successfully for professional requests during the course of their careers. Compounded by the wage gap that propagates over time, women cardiologists may never recoup the financial losses incurred during this period, resulting in reduced future financial security and independence. Both women and men who are now starting their independent careers may be especially disadvantaged.

Perhaps unsurprisingly, women are also bearing the brunt of the competing demands of personal life—parenting, homeschooling, and other caregiving duties—imposed by COVID-19-related mandates for social and physical distancing. Even in nonpandemic times, women cardiologists are less likely to have a partner who provides daytime childcare and are more likely to endure negative career consequences for taking parental leave.<sup>4</sup> Although enormously important in their own rights, these additional responsibilities have already been hypothesized to contribute to decreased academic productivity of women during the pandemic. Early data investigating authorship of preprints and published manuscripts both related

and unrelated to COVID-19 show that female academic productivity, as measured by publication authorship, has been disproportionately affected by the pandemic,<sup>5</sup> likely because of these competing responsibilities along with prepandemic realities such as bias and lack of research support and mentorship.

## PROMOTION VERSUS ATTRITION

For female academic cardiologists, all of these factors serve to negatively impact career advancement. Data from multiple different prepandemic time points have shown that women physician medical school faculty are promoted more slowly than men and that the sex/gender differences in rank are not explained by objective productivity metrics or by differential professional attrition. Although the currency of academia is publications, COVID-19 has raised the stakes in other ways. Significant government, society, and industry funding has been redirected to COVID-19-related efforts and may be preferentially awarded to researchers with successful track records, who are more likely to be senior men. Decreased time, funding, and support might result in fewer high-impact publications for women, which could lead to the continuation of women being overlooked for further career-advancing opportunities such as invited virtual or live talks, steering

committee leadership, and industry partnerships. These factors may lead to a perpetuating cycle that lasts far beyond the pandemic.

## THE PATH AHEAD

Without a systematic approach, the COVID-19 pandemic will become another hole in the already leaky pipeline for women cardiologists. Academic and nonacademic institutions, funding bodies, and our other partners in the cardiovascular medicine enterprise should proactively and deliberately create interventions that support the recruitment, retention, and advancement of women cardiologists during this time. Tracking sex-disaggregated data on cardiology fellowship interview offers, matched applicants, faculty hiring, salary adjustments, promotions, and productivity is critical to understanding the direct and indirect effects of COVID-19 on both women and men in cardiology. Collecting these data prospectively will allow us to appreciate the magnitude of these consequences and may lead to opportunities for early intervention for subpopulations of cardiologists, especially women if the data demonstrate a widening of existing disparities.

Institutions should implement mechanisms for all physicians to indicate pandemic-related occupational hardships, extend deadlines for achieving promotion or tenure, and invest in safe childcare options for employees. Virtual visit and telemedicine workflows should be preserved to accommodate parents and caregivers with remote work needs. Institutional leaders should take advantage of this time of financial reorganization to identify and resolve preexisting wage disparities. Traditional career advancement metrics should be modernized to incorporate COVID-19–related service, educational, and organizational leadership activities with commensurate reward bestowed. Professional societies, government bodies, and other partner organizations should sponsor funding and mentorship programs targeted toward those who have been historically excluded from these opportunities. Together, we need to normalize the inseparable nature of work and home lives during this time.

Science benefits from diversity, and the cardiology workforce should be reflective of the patients

for whom we care. Advancing cardiovascular science and medicine related to and beyond COVID-19 will take all of our effort, and we cannot afford to leave anyone behind.

## ARTICLE INFORMATION

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