Imagine that, over the course of a few years, you noticed a steady and annoying drop in the water pressure in your house. Finding no leaks in the fixtures, plumbers eventually diagnose the problem: a gradually worsening leak in the delivery line into your house. Repairing the leak would become a top priority for both you and the municipality supplying the water. The leak would be fixed, and systems would be put in place to avoid future problems.

Sadly, the analogy of the leaky pipe reflects the current state of affairs with respect to women in cardiovascular medicine and research: women leave academic medicine and research at a much higher rate than their male counterparts at every career stage. However, unlike the hypothetical example, the repair of the leak has not been a top priority, and few systems have been put into place to prevent future leaks. The brief summary that follows will show the importance of recruiting and retaining women in cardiovascular medicine and research, provide facts about the leaky pipeline, and suggest solutions for plugging the leak.

Why Care About Recruiting and Keeping Women in Cardiovascular Research and Medicine?

Cardiovascular disease is the leading cause of death in women. For years, some women with acute myocardial infarction were undeniably misdiagnosed because the established clinical indicators, which focused heavily on chest pain, were based on research conducted primarily in middle-aged men. Women often have more adverse side effects from drug therapy than men; for example, statin use increases the risk of diabetes mellitus more in women than men, where it is postulated that the smaller size of women may be the culprit. Efficacy and adverse effects of Food and Drug Administration–approved drugs have often been based on results from randomized controlled trials that were populated primarily by average-sized middle-aged men. Although we can never know how cardiovascular clinical practice may have developed had there been more gender parity, it is feasible that greater involvement of women may have led to more research that was better designed to address important questions of symptomatology and adverse drug effects. What we do know is that the corporate world has made some effort to embrace gender equity, and a recent report in the Atlantic Monthly found that companies using women in large numbers outperform their competitors on every measure of profitability. For these reasons, the leaky pipeline should be a top priority for cardiovascular medicine and research.

Facts About the Leaky Pipeline

Let us start with some numbers. Women have reached parity or surpassed men in completion of undergraduate programs but lag in graduate and professional programs. In the latest report from the American Association of Medical Colleges, 46% of graduates are women. In science, technology, engineering, and mathematics, 39% of PhDs are granted to women. The overall percentage of women in academic medicine is 38%, and the proportion of women recruited to academic medicine has increased to 47% of all recruits in the past decade. However, during the same period, women left in a slightly greater percentage (5%), accounting for 41% of all departures. This trend contributes to the consistent finding that the percentage of women declines in academic settings at higher ranks (ie, associate professors, 34%; professors, 21%) and in key leadership positions (ie, chairs, 15%; deans, 16%). In science, technology, engineering, and mathematics, the pattern is identical (ie, at 4-year colleges and universities, associate professors, 31%; full professors 18%). The end result of this persistent leaky pipeline is that gender parity at the highest academic ranks may never be achieved.

One of the key contributors to academic success is securing extramural funding for scholarly activities. At the National Institutes of Health, success rates since 2009 overall have been greater for women than men (Figure). Comparable findings have been observed in the American Heart Association funding; for one of its longest standing grant programs, the Grant-in-Aid, the success rate for women outpaced men by 2% from 2009 to 2013, when the percentages flipped in favor of men by about the same magnitude. These success rates hide 2 important facts. First, the percentage of women applying for grants is markedly lower: in 2008, 5590 women (27%) compared with 14 995 men (73%) applied for an National Institutes of Health Project Grant (R01). The disparities are greater for larger projects, for example, Program Project Grants (P01s); in 2008, just 75 women (17%) versus 316 men (83%) submitted

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Institutions should provide resources for families to have appropriate family leave and on-site day care. The National Institutes of Health should provide resources to cover costs for family care. Second, we must build better networking and mentoring opportunities for women. Women faculty members have fewer graduate students and postdoctoral fellows to support their work and less diverse networks. Women are also less likely to be asked to consult in the private sector, which further erodes diverse networks. Male faculty members can help to promote the female colleagues to science advisory boards, journal editorial boards, and science policy positions that would make them more visible.

Those of us involved in medical and science, technology, engineering, and mathematics education and research should be proud of the work accomplished to date in training more women and bringing them more into academia and the disciplines. We cannot, however, allow past successes to distract us from the work that remains to be done. Men and women with established careers in science and medicine have an obligation to staunch the leak, as it were, by fighting for the structural and cultural changes necessary to elevate women to their highest potential, with full and equal representation among the ranks of senior researchers and academic leaders. In fields allied to cardiovascular medicine and research, the fight for gender equality ought not to be motivated by principle alone, but also by the earnest desire to provide the best possible care for both sexes.

Disclosures
None.

References

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