It Takes a Village: Expanding Women’s Cardiovascular Care to Include the Community as well as Cardiovascular and Primary Care Teams

Ijeoma Isiadinso1 · Puja K. Mehta1 · Stacy Jaskwhich1 · Gina P. Lundberg1

Accepted: 17 April 2022 / Published online: 24 May 2022
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Abstract

Purpose of Review Our aim is to highlight some of the current issues that prevent women from getting sex-specific and gender-specific cardiovascular care and provide recommendations for new approaches and delivery models to improve cardiovascular care for all women.

Recent Findings Cardiovascular disease remains the number one cause of death for women in the US. Many women remain unaware of cardiovascular risk factors and many healthcare providers who care for women are also poorly informed and feel ill prepared to assess women for cardiovascular risk. Women’s Heart Centers have tried to bridge the gaps in women’s care between primary care and cardiology. Many of the impediments to care in the current models are lack of comprehensive care and socioeconomic societal limitations.

Summary New models of care and delivery are essential to change cardiovascular outcomes for all women, especially women at high risk.

Keywords Women · Cardiovascular disease · Outcomes · New delivery systems · Social determinants of health · Cardiovascular team

Introduction

Cardiovascular disease (CVD) continues to be the leading cause of mortality in women in the United States (US) [1]. Yet, many women have no cardiovascular (CV) risk assessment until well into their post-menopause care. Young women often receive routine care from their pediatrician then transition to a family medicine provider or gynecologist (Gyn) who will remain their primary care physician (PCP) until much later in life. The American Heart Association (AHA) and other health advocacy groups have been trailblazers in the quest to educate, empower, and increase awareness of heart disease in women. As a response to the increasing knowledge of heart disease in women, many women’s heart centers (WHC) have been established [2, 3]. While many gains have been attained, much work remains before the gender-related gaps in CV care that currently exist can be eliminated. In addition, not all women have benefited equally in prevention and treatment of CVD.

Current State of CVD Care in Women

A recent comprehensive report by the Lancet Commission on Women and CVD shed light on the global burden of CVD in women, noting that it remains understudied, under-recognized, and under-treated worldwide [4]. The goal of the Commission is to reduce the global burden...
of CVD by 2030. Hypertension (HTN) was the leading contributor to age-standardized CVD mortality globally, followed by other well-established risk factors including dyslipidemia, diabetes, smoking, unhealthy diet, sedentary lifestyle, and obesity [4]. In order to move the needle forward in improving CVD care in women, adequate funding to support sex-specific research on CVD and studies seeking a better understanding of the pathobiologic mechanisms is needed [5–8]. Implementation science is focusing on practical strategies and effective programs to deliver high-quality care for women and improve CV outcomes. Achieving equitable CV care in all women should focus on reducing barriers and take into account social determinants and socio-cultural aspects that influence women’s health [9].

Unfortunately, awareness of heart disease as the leading health threat for women has declined in recent years, as reported by Cushman et al. in the 2019 national AHA Survey of Cardiovascular Disease Awareness in Women [10•]. Of the 1553 participants who completed the survey (mean age 50), there were 61.7% non-Hispanic White, 12.3% non-Hispanic Blacks, and 15% Hispanics. Compared to 65% of women in 2009, only 44% of women in 2019 were aware that heart disease was the leading threat to women [10•]. Given that studies have found that women are often embarrassed and feel overwhelmed by heart disease, there is a need to increasingly discuss this topic and disseminate information at all socio-economic levels, and culturally tailored materials to improve heart health education [11].

New Approaches and Delivery Care Models

Figure 1 shows the key components of the proposed future delivery of CV care for women to improve CV outcomes.

Expanding Engagement of All Providers of Women’s Healthcare

New approaches and delivery models of healthcare for women are needed to improve CVD outcomes. Engagement of PCPs, beginning with pediatricians and later with Gyns and obstetricians (OB), is essential to provide early education concerning CVD risk factors and to initiate healthy prevention strategies [12]. Family medicine (FM) and internal medicine (IM) also need to utilize sex-specific evidence-based guidelines and therapies in women with special priority on the prevention guidelines [13, 14]. The first guideline for the prevention of heart disease in women was released in 2004 with the most recent update published in 2020 [15, 16••]. Menopause care should routinely include cardiovascular risk assessment and intervention with lifestyle and pharmacologic therapy for women at moderate and high CV risk [17–19]. Women’s CV care should include screening for CVD risk factors, obtaining a detailed obstetric history of adverse outcomes of pregnancy (AOP), and assessment of healthy lifestyle behaviors including exercise and diet [17]. Cardio-obstetrics has become its own niche field for women during infertility treatments, pregnancy, post-partum, and with AOP [20]. Autoimmune disorders, human immunodeficiency virus (HIV), and other nontraditional risk factors are

Fig. 1 New delivery model for women’s cardiovascular care. Legend: CV cardiovascular, ASCVD atherosclerotic cardiovascular disease, PCP primary care provider.
included as atherosclerotic cardiovascular disease (ASCVD) risk enhancers and are incorporated in the guideline for the management of blood cholesterol and the primary prevention of CVD guideline [13, 14]. Table 1 lists appropriate concerns that warrant referral to a women’s CV care team or cardiologist with specific interests in CVD in women.

Expanding Engagement of the Community

Partnering with community social organizations and churches to help educate the public about heart disease in women is important in the fight against CVD. Community stakeholders are trusted members who can facilitate access to communities at risk for heart disease and help deliver health messages in a culturally appropriate format. An example of a successful community-based intervention is the FAITH study [21]. This study evaluated the effect of therapeutic lifestyle changes (TLC) and motivational interviewing compared with education alone on blood pressure (BP) reduction in Blacks with uncontrolled HTN. The results showed a significantly greater reduction in BP at 6 months in the TLC-motivational group compared with the group that solely received education.

Similar to churches, beauty salons serve an important role in the community. Hairstylists are trusted members of the community whom clients confide in and consider as reliable sources of information. This is especially true in the African-American community which is disproportionately affected by cardiovascular disease. Beauty salons are a central location for women to comfortably express their concerns and vulnerabilities, seek advice, and discuss matters of concern to themselves and their community. In addition to financial and marital issues, medical issues are also discussed among the patrons of beauty salons. It is within this context that researchers have partnered with beauty salons to study successful strategies to educate women in the community about CVD. In the Beauty Shop Stroke Education Project, hairstylists were educated about the risk factors and symptoms of a stroke and then educated their clients during their appointments about stroke-related risk factors and symptoms [22]. Both the hairstylists and clients completed a survey prior to, and following, the educational intervention. The authors found that stroke education improved the participants’ knowledge of stroke symptoms (40.7% vs 50.8%, \( p = 0.006 \)) and this increased knowledge was sustained 5 months post-intervention.

In 2004, the AHA launched its inaugural Go Red for Women campaign to address the disparities in CVD awareness among women [23]. Key components of the Go Red for Women Initiative include educating women on the risk factors and symptoms of heart disease and empowering women to advocate for their own healthcare. This increased knowledge and awareness is anticipated to lead to better recognition of symptoms of CVD and prompt CV evaluation, thereby decreasing the delays in initiation of care for symptomatic women. The Go Red for Women campaign has expanded beyond the US and is now licensed by 55 organizations in 51 countries across the globe.

Table 1: Conditions which warrant referral to a women’s heart specialist

|   | Adverse Outcomes of Pregnancy (AOP) |
|---|-----------------------------------|
| 1- | (Eclampsia/ Preeclampsia, Gestational Diabetes, Hypertensive Disorder of Pregnancy, Placental Abruption, Preterm Delivery, Small for Gestational Age, Multiple miscarriages) |
| 2- | Hypertension |
| 3- | Diabetes |
| 4- | PCOS with central obesity, abnormal lipids, HTN |
| 5- | High cholesterol, LDL-C>190 mg/dL, TG>300 mg/dL |
| 6- | Menopause Hormone Therapy with CVD risks factors |
| 7- | Obesity with CVD risk factors |
| 8- | Migraine Headache with CVD risk factors |
| 9- | Autoimmune disorders, SLE, RA |

PCOS – Polycystic Ovarian Syndrome, HTN – Hypertension, LDL-C – Low Density Lipoprotein Cholesterol, TG- Triglycerides, CVD - Cardiovascular Disease

PCOS polycystic ovarian syndrome, HTN hypertension, LDL-C low-density lipoprotein cholesterol, TG triglycerides, CVD cardiovascular disease
National Coalition for Women with Heart Disease was founded in 1999 by 3 courageous women who had myocardial infarctions in their 40 s and were motivated to change the trajectory of other women with heart disease who experienced inadequate treatment or misdiagnoses in their care [24]. Other organizations utilize social media education and awareness initiatives that attract women from diverse backgrounds and with a variety of CVD risks and diagnoses. These organizations are helping to deliver education, empower women, and drive advocacy to accelerate the fight to improve CVD in women.

**Comprehensive Sex-Specific Training an Academic Curriculum**

While it is essential to partner with leaders and trusted members of the community, the medical community needs to educate its own members to reduce the disparities in CV care for women. Sex-specific training is a critical component of education for medical students and post-graduate trainees. At our institution, we offer an elective for medical students with faculty members of our Emory Women’s Heart Center. Other institutions have developed a curriculum for a Women’s Heart Health Course [25]. The standards for training general cardiology fellows are outlined in the ACC/COCATS Task Force 1 document [26]. One of the core competencies during cardiology fellowship training is to understand the presentation of angina in special populations which includes women. However, there is no specific document dedicated to sex-specific training for cardiology fellows. The Barbara Streisand Women’s Heart Center Fellowship in Women’s Heart Disease and Health addresses this by offering a comprehensive curriculum that provides didactics, clinical and research training in women and heart disease. Other women’s heart programs and academic institutions are also developing specific research and clinical fellowships in CVD in women.

**Team-Based Delivery of Cardiovascular Care**

In today’s ever challenging environment of healthcare, a CV Team (CVT) approach is becoming exceedingly vital in the delivery of high-quality care. The complexity of an aging population, increased incidence of CV comorbidities, physician shortages, and less affordable care certainly defines “needing a village” [27]. In order to meet the needs of our patients in the future and improve CV outcomes, team-based care is essential, especially given the current healthcare models which afford less time for physicians and patients during visits while increasing the number of patient encounters.

Multidisciplinary CVTs should include healthcare members such as physicians, advanced practice providers (APPs), dietitians, social workers, and pharmacists. Family members and caregivers are an integral part of the team. Due to the diverse CV risk factors and comorbidities that contribute to CVD, collaborating with subspecialists including PCPs, endocrinologists, Ob/Gyn, and neurologists is critical. As CV subspecialty clinics continue to emerge, APPs are instrumental in care provided in the heart failure (HF), electrophysiology, congenital heart disease, interventional cardiology, and structural heart disease clinics.

WHCs emerged in the late 1990s and many utilized APPs to provide clinical care and educational services to patients [3]. The CVT is best suited for creating culturally appropriate and effective patient education materials and being the frontline for counseling on lifestyle interventions such as exercise, healthy diet, and weight loss. Patients who need additional education and coaching can be identified by the CVT and enrolled in programs that include text messaging, mobile apps, and home-based programs that improve compliance, patient satisfaction, and outcomes [28]. Telehealth visits at patient convenience would also be practical for women juggling multiple gender roles with little time for self-care. These new delivery care models will be essential to improve CV outcomes for the highest risk women who are often the ones with the least resources and lowest income [29]. Education, engagement, and empowerment of women, especially the highest risk women, are essential for women so they know when to seek care, demand appropriate evaluation, and advocate for themselves. Studies have repeatedly shown that women receive delayed care and misdiagnosis of CVD more often than men so they must be their own advocates [29]. CVT providers can also help identify depression and psychologic and psychiatric conditions that should be referred to mental health specialists. Depression and stress are known contributors to CVD and need professional assessment without having patients feel shame or embarrassment [11].

CVTs can help streamline care and address other cardiac related issues to avoid fragmentation of care. A desired goal should be to establish personalized care protocols allowing each CV team member to practice at the top of his or her medical license. The American College of Cardiology (ACC) and AHA have established section committees to support and strengthen the CVT and integrate care for optimal patient experience and to improve CV outcomes. Many healthcare systems lack an effective referral process allowing for patients to get lost in the system. Implementing practice protocols for patients that include appropriate resources overseen by CVT members, nurse navigators, or patient advocates would prove efficient, thereby reducing medical nonadherence and interrupted care.

**Call to Action**

Figure 2 outlines the areas for improving CVD care in women.
CV Care for the Highest Risk Women

The prevalence of heart disease is higher among Black and Hispanic women in the US compared with their white counterparts [1, 29]. This is largely driven by a high prevalence of CV risk factors in these populations. While CV risk prediction models have allowed providers to educate patients regarding their CVD risk and intensify interventions to modify CV risk factors, there are some challenges with risk prediction calculators. While the 10-year risk for a CVD event may be low, often the lifetime risk is unacceptably high. The available risk algorithms have not been derived from Southeast Asian or Latino populations. As a result, the calculated CV risk may not represent the true observed CV risk and women of Southeast Asian or Latino descent may be assigned to a lower CV risk category. This may result in less aggressive therapies and interventions prescribed for these patients. ASCVD risk calculators need to be developed to adequately assess all women and accurately portray CV risk.

Many PCPs, and even cardiologists, feel ill prepared to assess CVD risk in women [11]. It is also imperative that culturally appropriate healthcare messages are disseminated using social media, radio, and television educating the public about risk factors for CVD in women, higher risk of CVD in minority groups, atypical symptoms in women, and the importance of seeking prompt care. This strategy can empower patients and their loved ones to partner with the medical team in caring for women at increased risk and advocate for better care.

Addressing Cultures and Trust Issues

The COVID-19 pandemic unveiled healthcare disparities in culturally diverse populations with disproportionately higher infection and mortality rates being observed in the Black, Asian, and minority ethnic (BAME) communities compared with white populations [30]. Contributing factors such as socioeconomic status, language barriers, lack of awareness and recognition of symptoms, delays in seeking medical care, and implicit bias from some healthcare providers remain unaddressed. As the US is projected to become a majority-minority nation, it is imperative that interventions to improve culturally appropriate care and trust among all community members are developed.

One of the first steps in improving trust is recognizing our own biases which may be difficult to acknowledge as sometimes they exist outside of our level of conscious awareness. This can be remedied by becoming more familiar with cultural differences in other ethnic groups to develop a better appreciation of these distinct differences. Implicit bias testing and training can aid in having a better understanding ourselves and can lead to formalized educational programs to teach cultural competency. These programs are more effective when taught by individuals of different cultures and included in the academic curriculum for medical trainees. Incorporating established clinical pathways in

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**Fig. 2** Call to action for women’s cardiovascular care. Legend: CVD cardiovascular disease, Ob/Gyn obstetrician/gynecologist, PCP primary care provider, CV cardiovascular
healthcare practice that foster respectful and comprehensive care is needed. On a local and national level, it is essential to develop policies to address gaps and differences in healthcare service utilization and access to care [31]. Partnerships with established community-based organizations and institutions that place an emphasis on health improvement, education, and service may allow a more efficient means of reaching those who lack access to care. Offering programs within the community, in collaboration with community-based organizations, such as CV health screenings and educational programs at places they feel most comfortable, such as churches, markets, and hair salons, may help foster trust. The more positive interactions and validation of integrity, coupled with peer influences in the communities in which they live, increase the likelihood that impactful healthcare changes will be made [32, 33]. Once culturally sensitive partnerships, encouragement of self-advocacy, recognition of bias, and modification of educational and practice patterns across multidisciplinary CV teams can be established, trust and the ability to cross cultural boundaries will hopefully follow.

Expanding Role of Women’s Heart Centers

Women’s Heart Centers that include PCP and Ob/Gyn providers can integrate comprehensive care for women from adolescent to geriatric ages. This can be a brick-and-mortar center where all specialties are housed or a virtual center over multiple campuses and locations. The essential component is collaboration between providers so women receive broad care that extends beyond “bikini medicine” [34]. Inclusion of FM, IM, Ob/Gyn, rheumatology, neurology, oncology, and endocrinology in the CV Team makes care more effective, efficient, and comprehensive for the patient. Transgender women need specific medical care that requires effective collaboration with endocrinology, surgery, and IM specialties and sensitivity to the physical and psychological care of these women. Having a WHC allows all providers the opportunity to participate in strategic planning meetings, research seminars, clinical conferences, medical educational symposia, and journal clubs that engage the group and keep all members well versed on the latest data for the optimal care of women. This also allows collaboration for future research and grant opportunities.

Many women are juggling career with caregiver responsibilities for children and aging parents, leaving no time for self-care. Centers that are geographically accessible with easy transportation and provide a wide range of services for women are ideal. Offering flexible clinic hours including weekend and evening (after school, child-friendly) options would increase follow-up in future healthcare delivery models. Importantly, insurance coverage for these services and cost-effective care for all women is essential. This includes single parent families, women on family or parental leave, women with disabilities, and women with socioeconomic disadvantages.

Expanding Role of Education and Academic Medicine

Academic institutions need to establish resident and fellow curricula that include heart disease in women in the primary care tracks such as Ob/Gyn, FM, IM, and specialties. These lectures and clinical sessions should cover a wide-range of sex-specific CVD education including competency training in the assessment of patients at high risk for ASCVD such as autoimmune disorders, HIV, and inflammatory disorders, recognition of atypical presentations of CVD in women, and understanding the impact of AOP on future CV risk. Since CVD remains the number one cause of death for women in the US, all specialties will see women at risk for ASCVD. Currently, the American Board of Internal Medicine subspecialty board in Cardiovascular Disease requires questions related to cardiovascular disease in women [35]. Adding a sex-specific curriculum to all specialties of care for women would cross medical specialty bridges and unify care for women of all ages. In addition, it would improve awareness and recognition of symptoms of heart disease in women which could not only result in more timely diagnosis of heart disease but also encourage more appropriate, life-saving treatment for these at-risk women.

Expanding Advocacy and Legislation in the Future

Maternal mortality is increasing in the US with Black women having the highest rates of maternal mortality [36]. The majority of maternal deaths are related to cardiovascular conditions, cardiomyopathy, and the hypertension-related conditions of preeclampsia and eclampsia [37••]. Women need adequate insurance coverage for prenatal and post-natal care. Women with AOP need coverage for appropriate post-partum care but also long-term care for management and risk reduction. Legislation to expand insurance coverage and eliminate the social disparities of care is essential. Local governments need to provide affordable public transportation options and expand social services for women in need of economic support. In addition to services for individual women, research funding and grants need to be set aside to target women’s CV health including addressing maternal mortality. Only through sex-specific research will providers develop the best practices to diagnose and treat women and reduce CV mortality in all women.
Conclusions

New approaches and delivery care models are needed to improve CVD in women. Implementing a multidisciplinary CVT, engaging community stakeholders as partners, and providing a sex and gender-specific curriculum on women’s heart disease for our trainees are all important components of an ideal delivery care model. The challenges to achieving equitable CV care for women are well-known and the time for developing innovative solutions is long overdue. New models of care can help address these barriers and improve the care and CV outcomes for all women.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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