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Editorial

# Social disparities and development opportunities in structural heart disease therapy

"...of all the forms of inequality, injustice in health is the most shocking," Martin L. King, Jr.

## Introduction

For years, innovative technologies have been created and patented that address structural heart diseases, such as aortic stenosis and mitral regurgitation. From medicinal breakthroughs to minimally invasive medical devices, patients all over the world have benefited from these discoveries. With the advent of new technologies that specifically target valvular diseases, the number of patients receiving these therapies will steadily increase.

Despite the market's maturity, treatment of heart valve diseases remains highly underpenetrated (Table 1) [1—4]. Though some patients are currently untreatable, there are many whose lives can be extended or improved with current therapy options. For physicians, this is an opportunity to expand their practice and serve those patients. So then the question becomes: what type of practice business model can physicians develop that will allow them to reach those potential patients?

## Healthcare disparities

One answer is to address existing healthcare disparities. Healthcare disparities are defined as differences in health care that are not the result of access-related factors, clinical needs, patient preferences or the appropriateness of the intervention [5]. For people of color and women, these differences in health care can be an unfortunate reality and occur even when insurance and income are controlled.

The exact number of people who are underserved due to disparities has yet to be quantified. However, we can approximate how large the disparity gap is as it relates to heart valve therapies by assessing treatment rates of the Medicare population. Studies have shown that the prevalence of aortic stenosis and mitral regurgitation for Hispanics, African Americans, White women and White men are all relatively the same (Table 2) [6]. Yet in 2005, data show that White men accounted for 35% of the overall Medicare population and 50% of all valvular surgery [7,8]. Though more research still needs to be done, this may be indicative that patients face disparities in healthcare in a two-fold manner: underdiagnosed and undertreated.

## Evidence based medicine

In 2002, The Kaiser Family Foundation and the American College of Cardiology Foundation collaborated to publish a report titled, *Racial/Ethnic Differences in Cardiac Care: The Weight of the Evidence* [9]. Research analysts developed a list of criteria that was used to review the literature and determine if a study was robust and decisively conclusive. Out of 158 studies, 81 met the inclusion criteria. Sixty eight of the 81 studies meeting the inclusion criteria concluded that there were significant differences in how cardiac care was given between various racial and ethnic groups.

People of color also have an elevated risk of developing cardiovascular diseases. Only 25% of people of Latino descent who have diabetes know that they are at risk for heart disease [10]. African

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**Table 1** Treatment rates of heart valve diseases in the US.

| | Disease severity | Patient population | Valve repair | Valve replacement | Population with severe disease untreated |
|---|---|---|---|---|---|
| Mitral regurgitation | Moderate to severe | 2,300,000 [1,2] | | | |
| | Severe | 220,000 [1,2] | 28,000 [1] | 19,800 [1] | 72%[a] |
| Aortic stenosis | All grades | 749,000 [1,3] | | | |
| | Severe | 125,000[b] [1,3,4] | | 79,000 [1] | 37%[a] |

[a] Includes repair and replacement.

[b] Estimate published in the Health Research International Report [1], was derived from the Cardiovascular Health Study by Stewart et al. [3]. This paper estimated the prevalence of aortic stenosis (by age) from a cohort of 5201 patients. This prevalence information was combined with data from the Helsinki Aging Study by Iivanainen et al. [4], which allowed an estimation of the percent of patients with aortic stenosis that have severe stenosis.

**Table 2** Prevalence of valve diseases in the US population aged >60 years by race and gender[a].

| | Mitral regurgitation (%) | Aortic stenosis prevalence (%) |
|---|---|---|
| African American women | 32 | 17 |
| Men | 33 | 15 |
| Hispanic women | 33 | 18 |
| Men | 31 | 14 |
| White women | 34 | 17 |
| Men | 32 | 16 |

[a] The entire cohort of 2805 patients included 1881 women and 924 men [6].

Americans are 2.5 times more likely to die from heart failure as compared to White Americans [11]. People of Indian descent are twice as likely to develop coronary artery disease as compared to White Americans [12].

Women were also found to be amongst the groups of people who received disparate care. It is a fact that cardiovascular disease is the number one killer of women in America and that more women than men die from it every year. However, women receive only 33% of angioplasties, stents and bypass surgeries and only 35% of open-heart surgeries [13].

## Reasons for disparity

It is reasonable to assume that disparities exist not from intentional motives or factors; instead, many exist because people are unaware of actions that could potentially lead to them. A Harvard study recruited 220 residents from Atlanta and Boston to measure the effects of implicit bias on treatment recommendations [14]. Participants were asked to rate their likelihood of diagnosing a patient with coronary artery disease (CAD) and their likelihood of prescribing thrombolytic therapy.

Each resident was assigned either an African American patient or a White patient, but everyone was given the same vignette: a patient who entered the ER with possible symptoms for CAD. The ratio of diagnosis to treatment was significantly higher for the White patients as compared to the African American patients, independent of the same clinical presentation. A post-study survey found that 72% of the participants admitted that subconscious bias about race may affect their recommendations.

A 2003 National Health Disparities Report stated that non-White patients had significantly more communication problems with physicians. It also reported that Asians, Hispanics and those of lower socio-economic levels had more issues accessing healthcare information. Low levels of physician cultural competency compromise a patient's health, trust and satisfaction [15].

Assumptions that all patients present with cardiac diseases in the same fashion must also be challenged. It has been shown that some African Americans may present with mitral valve disease as early as age 45; this is 15 years prior to when Caucasian males presented in the same study [16]. Another 2009 study also showed that women can present symptoms of cardiovascular disease differently from men [17]. These clinical insights are examples of why healthcare professionals must be intentional about not relying solely on traditional means to treat diverse patient groups.

## Implications

Lower administration of quality cardiac care to persons from racial and ethnic groups who are more likely to develop cardiovascular diseases also creates a disparity gap [18]. As of today, the US is comprised of 30% ethnic minorities; by 2050, it will have increased to at least 50% [19]. Healthcare disparities must be addressed today to prevent even more people in the future from suffering disproportionally.

Disparities in healthcare are a real issue and when they are not addressed, many people die prematurely or suffer unreasonably and potentially add cost to the healthcare system. In a nation that is full of medical resources, facilities and providers, this simply should not be. Eliminating these disparities is not an improbable task, but it requires dedicated individuals and organizations to collectively execute a multi-faceted approach.

## Elimination of healthcare disparities

Making all involved with healthcare delivery aware of clinical evidence should be among the first steps of eliminating healthcare disparities. Awareness may come in the form of symposia, conference workshops, hospital in-services and community forums. Evidence based medicine should be presented to show the degree to which disparities occur throughout many institutions and geographical locations.

With the current healthcare information technology (IT) initiatives, healthcare providers have an opportunity to perform retrospective evaluations of medical records and develop quality systems to measure progress prospectively. Trends should be assessed to see if there are disparities in treatment for women and people of color not only nationally but locally as well; if some are discovered, then follow-up intervention should be scheduled with those applicable groups. Likewise, current protocols should be reviewed to see where improvements could be implemented. An alternative method is to adopt race and gender specific care protocols to account for variations in cardiac disease symptoms.

Hospitals could also create an integrated referral model that allows for one department to refer to another. An example of this is an obstetrician/gynecologist (OB/GYN) giving patients a simple cardiac disease survey during their visits [20]. If the patient has substantial risk factors, then the OB/GYN would schedule an appointment for the patient to meet with a cardiologist before she left the office. The patient is more likely to attend her appointment and is receiving well-rounded care.

Policy changes enforced by the government could also bring changes to how we currently treat patients. Data collection should capture a patient's gender, race, ethnicity and primary language. At one point in America's history, it was understandable that this type of data collection could have interfered with patients receiving equitable care. However, subsequent decisions that were designed to protect such patient data may now be our present day hurdles.

Electronic medical records (EMRs) and the push to establish them for all patients creates a foundational mechanism to track these important data. As the largest payer in the form of Medicare and Medicaid, the federal government and state governments are in an optimal position to mandate this information be recorded in EMRs and be used appropriately to track and assess disparities of care. This information could then be used to track year-over-year progress of proper patient treatment and to provide clinical validation to assess accurately the magnitude of this issue.

Strategic partnerships and incentives may also accelerate efforts to address these disparities. Industry leaders could partner with influential healthcare organizations to host CME courses that educate more healthcare professionals on this subject. Physicians and industry could further partner to design and execute clinical trials that establish the clinical evidence clearly proving the benefit of therapies in underserved patient populations. Financial incentives could be awarded to those healthcare professionals and facilities that narrow disparity gaps between different patient groups. Additionally, top performing hospitals could be recognized in the US News and World Report for being the best in providing services to diverse patient populations.

Healthcare providers should consider elevating their cultural competencies in order to connect better with patients. Diverse healthcare staffs may influence a patient's perception of quality care. Educational materials that are ethnically and linguistically inclusive are another means of accomplishing this goal. Clinical trial investigators should also strive to increase the number of women and people of color represented in their cohorts.

Community outreach is a crucial component of any healthcare disparity initiative. This gives the medical community an opportunity to bring awareness to and build relationships with those whom they will be serving. This step is especially important because a lack of trust by minority patients towards physicians has often been cited as a factor for not scheduling regular medical visits [15].

Health forums at centers of trust can be hosted by physicians at churches, barber shops and work sites. Furthermore, partnerships can be created with fraternities, sororities, professional organizations, alumni groups and denominations to gain a larger audience. Free health screenings, held in conjunction with industry partners, may also result in new patient streams.

## Conclusion

Surgery to correct heart valve disease is not a novel practice. Techniques have been perfected in such a way that mortality rates are low and patients are living longer, healthier lives. So it is surprising that this particular market remains largely underpenetrated, especially for women and people of color. Since we possess the means to correct diseases, such as aortic stenosis and mitral regurgitation, we must now be intentional about extending these means to every patient who visits our practices and enters our facilities.

The time to address disparities in healthcare is now. We have highlighted disparities in the management of patients with heart valve disease, but disparities in patient care exist broadly. All of us involved in healthcare can impact the elimination of these disparities. By increasing awareness of the disparity statistics, educating diverse patients of cardiac disease risks, demonstrating the benefit of serving patients in diverse populations, increasing avenues of access and becoming more culturally competent, not only will physician practices expand, but thousands of lives will benefit in the name of responsible medicine.

## Conflict of interest statement

All authors are employees of Medtronic, Inc., USA, which manufactures therapeutic devices for the heart including cardiac valves.

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John Liddicoat,
Ravyn Miller,
Sean Gallimore,
Vickie Conley,
Robert Clark
*Medtronic, Inc.,*
*8200 Coral Sea Street NE,*
*MVS71, Mounds View,*
*MN 55112,*
*United States.*
*Tel.: +1 763 526 8765; fax: +1 651 367 8113.*
*E-mail address:* john.liddicoat@medtronic.com
(J. Liddicoat)