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RESEARCH REPORT

for U.S. health care providers

Roadmap to Advancing Equity Within Your Structural Heart Program

Three imperatives to address inequities in structural heart care

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While highly effective treatments exist for aortic stenosis (AS), innovations in care have not been equally utilized by AS patients. Treatment disparities span a broad range of patient demographics, including race, ethnicity, gender, socioeconomic status (SES), and insurance status. Structural heart (SH) programs have an opportunity to proactively identify disparities and address unmet care needs for the patients they serve.

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Snapshot of structural heart inequities

Research to date does not consistently indicate whether certain patient groups disproportionately experience AS. However, researchers have found disparities in AVR utilization for patients with AS. For example, there are significant inequities in AVR utilization for Black and female patients.

SH leaders must launch data-driven, concentrated efforts to identify and act on inequities that exist in their program.

9%

Percentage of women less likely to receive AVR than men

Racial and gender disparities in overall AVR utilization reveal underserved patient groups

Not all AS patients receive equal treatment. Research shows that Black patients with symptomatic AS are significantly less likely to receive an aortic valve replacement (AVR) than their White counterparts. Multiple factors may drive this disparity, such as a patient's likelihood to decline AVR, not receive follow-up care, not be referred to cardiology, or exhibit comorbidities that mask AS symptoms.

8%

Percentage of Black patients with severe AS less likely to receive AVR within 1 year of diagnosis than White patients

Female patients also experience lower AVR treatment rates compared to male patients. Gender disparities persist even after controlling for patient-level factors, suggesting that they may be caused by treatment bias.

More research must be done to explore whether there are disparities in AVR treatment that impact other racial and ethnic groups or patients who identify as transgender, non-binary, or genderqueer.

Source: Batchelor et al., "Aortic Valve Stenosis Treatment Disparities in the Underserved: JACC Council Perspectives", *Journal of the American College of Cardiology*, 2019; Brennan et al., "Racial Differences in the Use of Aortic Valve Replacement for Treatment of Symptomatic Severe Aortic Valve Stenosis in the Transcatheter Aortic Valve Replacement Era", *J Am Heart Assoc.*, 2020; Advisory Board, "Drive Structural Heart Program Performance: Three Strategies to Meet Market Demand and Manage Capacity, 2021; Sleder et al., "Socioeconomic and Racial Disparities: a Case-Control Study of Patients Receiving Transcatheter Aortic Valve Replacement for Severe Aortic Stenosis", *J Racial Ethn Health Disparities*, 2017; Novaro et al., "Prevalence of Mitral Valve Prolapse and Congenital Bicuspid Aortic Valves in Black and White Patients Undergoing Cardiac Valve Operations", *The American Journal of Cardiology*, 2013; Chaker et al., "Sex Differences in the Utilization and Outcomes of Surgical Aortic Valve Replacement for Severe Aortic Stenosis", *J Am Heart Assoc.*, 2017; Advisory Board interviews and analysis.

Limited access to TAVR lowers utilization among lower-income and rural patients

The majority of hospitals that have established TAVR programs serve more socioeconomically advantaged patient populations. Regardless of whether this is associated with available investment capital, more favorable reimbursement, location, or other factors, it leaves lower income patient markets without access to TAVR. Studies have shown that geographic areas with lower median household incomes and a higher proportion of dual-eligible patients have lower rates of TAVR.

SH leaders can take steps to ensure that patients outside of metropolitan areas have access to care by ensuring that cardiologists and PCPs who serve rural populations have the resources needed to connect patients to SH care.

Impact of income and population density on TAVR utilization

DATA SPOTLIGHT

10%

Increase in odds of receiving a TAVR with every $10,000 increase in income

7x

Increase in TAVR utilization in highest population density regions compared to lowest population density regions

43.5

Average extra miles traveled to a TAVR center for patients in low population density regions vs. high population density regions

Source: Nathan et al., "Socioeconomic and Geographic Characteristics of Hospitals Establishing Transcatheter Aortic Valve Replacement Programs, 2012-2018", *Circulation: Cardiovascular Quality and Outcomes*, 2021; Damluji et al., "Transcatheter Aortic Valve Replacement in Low-Population Density Areas", *Circulation: Cardiovascular Quality and Outcomes*, 2020; Advisory Board interviews and analysis.

SNAPSHOT OF STRUCTURAL HEART INEQUITIES

Equitable TAVR deployment may alleviate AS treatment and outcome disparities

While there are clear socioeconomic and geographic disparities in TAVR access, studies suggest that in comparison to SAVR, TAVR can alleviate AS mortality and readmission rate disparities. This is demonstrated in two ways:

First, TAVR has higher utilization. Researchers have observed faster growth in TAVR utilization among non-White racial groups compared to SAVR. Women have also shown higher rates of TAVR utilization than men, despite being underrepresented in overall AVR utilization.

Second, TAVR has fewer disparities in overall outcomes. Studies have not found differences in TAVR mortality or readmission rates between Black, White, female, and low SES patients. However, they have found that Black patients experience higher mortality and readmission rates than White patients after SAVR. Additionally, female patients experience higher mortality than male patients after SAVR, and low SES patients experience higher mortality than high SES patients after SAVR. This highlights TAVR's potential, however some inequities in outcomes do persist. For example, Black and Hispanic TAVR patients experience higher in-hospital complications than White patients, leading to a prolonged length of stay.

These differences demonstrate the need to go beyond creating equitable access to care. While equitable access is important, programs must ensure that care delivery and outcomes are also equitable. Consider investigating points throughout the care pathway to identify how potential biases are impacting patient care.

DATA SPOTLIGHT

53%

Of AVRs in Black patients were TAVR[1]

47%

Of AVRs in White patients were TAVR[1]

Source: Brennan et al., "Racial Differences in the Use of Aortic Valve Replacement for Treatment of Symptomatic Severe Aortic Valve Stenosis in the Transcatheter Aortic Valve Replacement Era", *J Am Heart Assoc.*, 2020; Lowenstern et al., "Sex Disparities in Patients With Symptomatic Severe Aortic Valve Stenosis", *American Heart Journal*, 2021; McNeely et al., "Racial Comparisons of the Outcomes of Transcatheter and Surgical Aortic Valve Implantation Using the Medicare Database", *Am J Cardiol*, 2018; Erinne et al., "Racial Disparities in the Treatment of Aortic Stenosis: Has Transcatheter Aortic Valve Replacement Bridged the Gap?", *Catheter Cardiovasc Interv*, 2021; Okoh et al., "Socioeconomic Status and Its Impact on Outcomes After Surgical vs Transcatheter Aortic Valve Replacement", *J Am Coll Cardiol*, 2021; Okoh et al., "Health and Healthcare Disparities: Impact on Resource Utilization and Costs After Transcatheter Aortic Valve Replacement", *Innovations (Phila)*, 2021; Advisory Board interviews and analysis.

1. Based on AVR volumes from 2015-2016

SNAPSHOT OF STRUCTURAL HEART INEQUITIES

Eight dimensions of a health equity strategy

Health equity is achieved when every person has the opportunity to attain their health potential, and no one is disadvantaged from achieving this potential due to socially determined circumstances.

Organizations have found that by integrating an equity lens into their program strategy, they can improve outcomes, reduce costs, and improve patient ability and willingness to seek care.

Advisory Board has identified eight dimensions of a health equity strategy—each varying in level of sophistication. This brief offers perspective on how to integrate health equity within your structural heart program across these dimensions.

Dimensions of a health equity strategy


Governance


Goals


Data collection

Data analysis


Staff training


Holistic care


Workforce diversity, equity, and inclusion


Social needs and community outreach

Why health equity is a strategic priority

- Existing disparities in patient access to AVR procedures **limits market share or patient capture**
- CMS is starting down the path of tying **reimbursement to health equity measures, as the FY2023 IPPS includes policies addressing health equity**
- Health plans are incorporating **equity metrics into provider quality scorecards**
- The health care industry has a growing interest in creating **mutually beneficial value-based arrangements**

Source: National Center for Chronic Disease Prevention and Promotion, "Health Equity", 2022; Advisory Board, "The 2023 Inpatient Proposed Rule: What You Need to Know", *Daily Briefing*, 2022; Advisory Board interviews and analysis.

Three imperatives to promote equity in structural heart care

These three imperatives outline how programs can recognize and address inequities in SH care. Each imperative varies in time and resource investment depending on whether your organization is “just getting started” or “moving the market” to advance equity. To successfully turn the dial on a program-specific health equity initiative, leaders should work hand-in-hand with their service line, system, and community partners.

01

IMPERATIVE

Establish a targeted, data-informed equity ambition

02

IMPERATIVE

Invest in solutions to patient access barriers

03

IMPERATIVE

Instill a program culture of patient trust and engagement

01 Establish a targeted, data-informed equity ambition

Dimensions of health equity | Data collection, data analysis, goals

For many programs and service lines, limited experience, subpar data, and a lack of proven best practices makes measuring and addressing health equity a challenge. Leaders can address these barriers by taking incremental steps to develop a data-driven approach that identifies disparities in care.

Quantitative and qualitative data is necessary because it supports the identification and explanation of disparities specific to a given program and patient population. It also helps leaders better understand the root cause of disparities and barriers to equitable care. This information is crucial to design equity solutions that align with the largest disparities.

Programs should work with both service line and system leaders to align their program's data collection and equity imperative with the organization's broader health equity priorities.

Source: Advisory Board interviews and analysis.

Keys to a data-driven approach for advancing equity

1. Use data to identify and understand existing disparities

Program leaders stratify clinical and operational performance metrics and patient experience data by sociodemographic factors to identify the specific inequities in treatment access and outcomes impacting their patients. To implement this, collect the necessary sociodemographic data from patients. At a baseline, organizations should collect REGAL data (race, ethnicity, gender and sexual orientation, age, and language) and if feasible, social determinants of health (SDOH) data (e.g., insurance status, zip code).

This helps leaders understand differences across patient groups, informs strategy, and prevents them from operating based on assumptions about disparities within their program.

Sample metrics to stratify by REGAL and SDOH data

CLINICAL METRICS

- Procedure rates
- Treatment outcomes
- Length of stay
- Readmissions rates
- Stroke
- Mortality rates

OPERATIONAL METRICS

- Referral rates
- Referral to treatment timelines

PATIENT EXPERIENCE

- HCAHPS[1]
- NPS[2]

1. Hospital Consumer Assessment of Healthcare Providers and Systems.
2. Net Promoter Score: The likelihood of a patient to recommend the program.

Source: Advisory Board interviews and analysis.

2. Diversify data sources to paint the full picture

Not all barriers to care can be surfaced through traditional, quantitative data sources. There are several reasons for this, such as underrepresentation of patients who are not receiving care.

Importantly, quantitative data sources may identify a disparity, but they don't tell you why that disparity exists. To fully understand the "why" behind disparities, leaders must supplement quantitative data with qualitative insight. Collect these insights internally through channels like patient and family advisory councils, and externally through community advisory boards or community partnerships.

Programs and service lines should also gather input from patients and referring providers to fully understand the root causes of barriers to treatment. To do this, collect and analyze qualitative data through feedback channels to better understand disparate outcomes across patient populations. In addition, survey communities to understand how inequitable community conditions impact health outcomes. Leveraging qualitative insights to provide a deeper understanding of quantitative findings helps leaders discover where disparities exist and why they're happening.

Forums to collect qualitative data:

Internal forums

- Referring provider conversations or surveys
- Patient and family advisory boards

External forums

- Community health needs assessments
- Community advisory boards

Source: Advisory Board interviews and analysis.

3. Incorporate data into a deliberate strategy for improving equity

Gathering data and feedback is the first step, but to produce meaningful health equity measurements, you need to incorporate your findings into an intentional strategy. Programs should set specific, actionable, and measurable short- and long-term goals that focus on the disparities you've identified. Consider designing tools such as dashboards to track metrics and demonstrate progress over time.

When setting short-term goals, seek opportunities that are lower cost, require fewer resources, and are achievable in the near-term. Achievable short-term goals can boost your staff's confidence in your health equity strategy and engage them in long-term efforts. Long-term goals should aim to improve outcomes and address the root cause of disparities.

Forums to share dashboards:

- Multidisciplinary weekly huddles
- Conversations with referring physicians
- Program and/or service line leadership meetings

Sample goals to instill accountability and measure progress

SHORT-TERM GOALS

- ❑ Improve access to interpreter services
- ❑ Embed equity considerations into criteria for all decisions
- ❑ Expand provider outreach and community partnerships for TAVR education in underserved communities

LONG-TERM GOALS

- ❑ 95% of eligible female patients referred to cardiology to discuss TAVR
- ❑ 5% reduction in mortality for Black patients following SAVR
- ❑ 10% reduction in LOS[1] for Black and Hispanic patients following TAVR

1. Length of stay.

Source: Advisory Board interviews and analysis.

02 Invest in solutions to patient access barriers

Dimensions of health equity | Social needs and community outreach, holistic care

Up to two-thirds of symptomatic AS patients are not properly referred to care or have incomplete heart team evaluations. The reasons are multi-faceted and diverse. For example, patients may not receive a referral because of a lack of standardized protocols, symptom misclassification, and subconscious biases that influence referral behavior.

Even for patients who are referred, structural barriers may limit utilization of treatment. Patients can be disconnected from the healthcare system due to uncertainty of how or when to seek care, mistrust about seeking care, proximity to sites of care, lack of transportation, inability to take time away from work, financial constraints, and insurance status. Patients who face these barriers have limited opportunities to obtain AVR treatment.

Programs may view these constraints as outside of their control. However, even before a patient visit, programs have an opportunity to partner with referring providers, community organizations, and other service lines to equitably improve access for patients who are underrepresented. By addressing barriers, programs can advance equity while capturing more patients, competing in new markets, and growing volumes.

DATA SPOTLIGHT

45%

Of potentially appropriate AVR candidates died within 1 year of not receiving treatment

All patients with severe valvular heart disease being considered for valve intervention should be evaluated by a multidisciplinary team, with either referral to or consultation with a Primary or Comprehensive Valve Center.

ACC/AHA Guidelines for the Management of HVD

Source: Otto et al., "2020 ACC/AHA Guideline for the Management of Valvular Heart Disease," *Circulation*, 2021; Tang et al., "Contemporary reasons and clinical outcomes for patients with severe, symptomatic aortic stenosis not undergoing aortic valve replacement," *Circulation: Cardiovascular Interventions*, 2018; Advisory Board interviews and analysis.

2. INVEST IN SOLUTIONS TO PATIENT ACCESS BARRIERS

Keys to equitably advance access to treatment

1. Use decision support tools and protocols to inform patient referrals

Ensuring that patients can equitably obtain AVRs requires that referring providers be educated on when and how to refer for subspecialty care. Due to changing guidelines and lack of consistent protocol, referring cardiology and primary care providers face uncertainty about who and where to refer and may concerns about AVR risk.

More standardized processes can prevent provider hesitation, bias, or misclassification from impacting the rate of referral. SH leaders can work with referring providers to implement referral protocols and clinical decision support systems (CDSS)[1]. Utilizing these resources supports compliance with guidelines, improves diagnosis-to-referral times, reduces loss-to-follow-up rates, and assists providers in improving care quality.

Reasons for delayed or deferred referral:

- Provider doesn't recognize patient as a candidate for treatment
- Patient symptoms are misattributed to other comorbid conditions
- Provider miscategorizes patient risk level
- There is no follow-up after an inpatient hospitalization

DATA SPOTLIGHT

Black and Hispanic patients are less likely to be referred to cardiologists and cardiac surgeons.

Subconscious physician bias and lack of awareness of treatment disparities are recognized as potentially contributing factors.

Black patients carry a disproportionate burden of comorbidities.

This may confound or mask the symptoms of AS.

1. Clinical decision support systems (CDSSs) are part of a rapidly growing set of tools housed within the electronic medical record (EMR) for providers and can function as electronic reminders regarding quality care guidelines.

Source: Batchelor et al., "Aortic Valve Stenosis Treatment Disparities in the Underserved: JACC Council Perspectives", *Journal of the American College of Cardiology*, 2019

TACTIC IN ACTION

How CDSS improves referral rates

To address the discrepancy between the number of patients with severe symptomatic AS and those who are referred for treatment, a large Midwestern health system designed a pre-/post-test intervention to determine how using a CDSS would impact referral rates. All general cardiologists, primary care providers, and APPs[1] ordering echocardiograms receive a CDSS alert through the EHR if patient results meet criteria for severe AS. When the ordering provider receives the echocardiogram results, the report appears with a banner alerting the provider to review for severe AS.

Historically, the alerts used were passive and appeared on the patient record screen without requiring action. Since alerts appear after the patient interaction, providers might not have seen the alert on the patient's chart. To ensure alert engagement, the CDSS development team designed it as a message that is viewed in the results queue at the same time as the test results and prompt the provider to take immediate action.

Provider meets with patient and then orders diagnostic testing

Provider receives test results including a message indicating an abnormal result

Provider immediately receives specialty referral instructions and a link to the ACC/AHA guidelines

The patient population characteristics before and after implementation were relatively similar, meaning that the use of a CDSS alone does not improve diversity in patient access to care. However, it does introduce a more evidence-based and reliable referral process. This can help prevent provider bias or misclassification from playing a role in who gets referred to care.

OUTCOMES

25% Increase in referral rate from **72%** to **97.5%** for eligible patients

Improved timeliness to treatment, better outcomes for patients with severe AS

Decrease in patient complications and financial burden

1. Advanced practice providers.

Source: Kirby et al., "Using Clinical Decision Support to Improve Referral Rate in Severe Symptomatic Aortic Stenosis: A Quality Improvement Initiative", *CIN: Computers, Informatics, Nursing*, 2018; Advisory Board interviews and analysis.

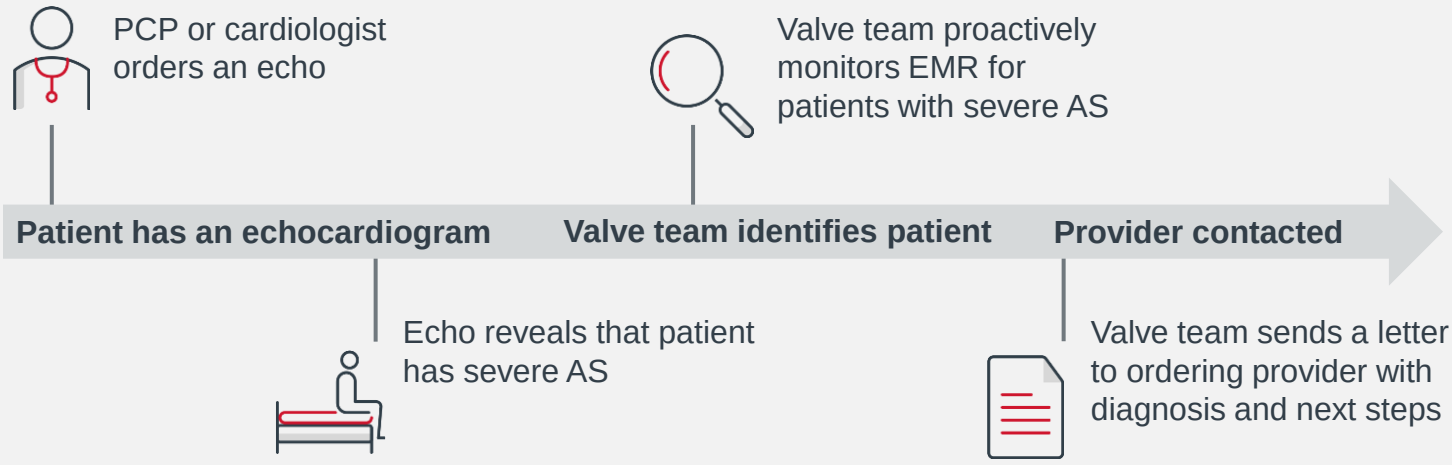
TACTICS IN ACTION

MaineHealth utilizes referral guidelines to limit unintended variation in care

Frequent updates to referral guidelines makes it hard for referrers to stay up to date on the latest criteria outside of their specialty. To support referrers, MaineHealth's Cardiovascular Medicine and Vascular Surgery teams translated national recommendations and the best available evidence into easy-to-follow referral guideline resources, organized by disease state.[1] These guidelines limit unintended variation in referrals by offering treatment recommendations and next steps based on symptoms and severity/risk level.

Alexian Brothers improves diagnosis-to-referral times and loss-to-follow-up rates

Primary care providers and cardiologists may not be aware that their patients have been diagnosed with severe AS. This prolongs the time from diagnosis to referral and may cause the patient to be lost to follow-up. Alexian Brothers improved its diagnosis-to-referral times and loss-to-follow-up rates in two steps. First, they monitoring their EMR for patients diagnosed with severe AS. Next, they send a letter to eligible patients' primary care provider or cardiologist to inform them of the diagnosis and appropriate steps based on the current guidelines.[2] The program found that having the valve team follow-up with the appropriate provider is more effective than relying on another team to do this work.



1. Referral guidelines located in appendix.
2. Letter template located in appendix.

Source: MaineHealth, "Clinical Guidelines" 2022; Alexian Brothers Medical Center; Advisory Board interviews and analysis.

2. Ensure equitable access to care information for potential patients

Data suggests that a lack of understanding of heart disease symptoms and treatment options results in patients being unsure of when to seek care or how to access treatment.

DATA SPOTLIGHT

< 1 in 4

Adults know somewhat or a great deal about heart valve disease

30%

Of people over the age of 65 know nothing about heart valve disease

Black patients with AS are less likely to report dyspnea than White patients and are more likely to attribute chest pain to a gastrointestinal rather than cardiac source.

For patients to equitably benefit from AVRs, programs must ensure access to information that promotes general education about heart disease and treatment options. SH programs can leverage multi-modal[1] communication channels to reach broader patient populations and increase community knowledge of heart disease symptoms and treatments. Examples of this include:

- Conducting Facebook Live sessions to educate followers on heart valve disease, including symptoms, diagnosis, and treatment
- Leverage media platforms, like TV and radio ads, that cater to elderly patients who are the most common candidates for AVR procedures

To equip patients to seek and access care, programs can leverage direct-to-consumer marketing designed to engage patients outside of the health system. Being in the subspecialty space, SH programs are often hesitant to engage in direct-to-consumer marketing as they do not want to come across as competing with referring providers for patients. However, to ensure equitable access, it's important to provide resources that help these patients seek care on their own. To avoid stepping on the toes of referring providers, approach patients directly with educational materials that focus on symptom recognition and next steps, rather than program recruitment.

1. Direct mail, social media, billboards, commercials, emails, etc.

Source: Batchelor et al., "Aortic Valve Stenosis Treatment Disparities in the Underserved: JACC Council Perspectives", *Journal of the American College of Cardiology*, 2019, Minneapolis Heart Institute Foundation, "The Facts About Valve Disease," 2022; Advisory Board interviews and analysis.

TACTICS IN ACTION

Cleveland Clinic offers language options for patient resources

Cleveland Clinic's Heart, Vascular & Thoracic Institute's digital resources are available for patients to access on-demand and are offered in a variety of formats to accommodate different learning styles (e.g., videos, podcasts, live chats, and interactive tools). They tailor resources to meet their community's specific needs by offering language options that are representative of their patient population (i.e., English, Spanish, and Russian).

RESOURCE SNAPSHOT

What is valve disease?

HOW DOES IT MAKE ME FEEL?
Includes a list of symptoms associated with valve disease

HOW DO I KNOW IF I HAVE VALVE DISEASE?
Includes description of diagnostic tests involved

WHAT CAN I DO?
Recommend they visit a doctor, remind them to take medications as instructed, and offer heart-healthy lifestyle changes

Henry Ford shares provider profiles for interested patients

Henry Ford supports patients seeking care by making it easy for them to learn about potential providers. Henry Ford's website features provider profiles that are designed to give patients more control over finding a provider who fits their needs and preferences.

Personalized profiles simplify the search for the right provider

Profiles include:

- An "About Me" section highlighting the provider's language competencies and care philosophy
- Video interviews that help to humanize providers and allow patients to hear them speak about their approach to care
- Patient ratings and reviews about their experience with the provider

Source: Cleveland Clinic Heart, Vascular & Thoracic Institute, "Patient Education Resources"; Henry Ford Health; Advisory Board interviews and analysis.

3. Leverage community and cross-industry partners to reach more patients

When patients visit traditional sites of care, they can be referred for TAVR. The challenge is that not all potential patients actively seek care or visit traditional sites of care. Programs should focus on exploring different ways to meet patients where they're at and diversify exposure to care information.

Programs can improve their patient reach and overcome structural barriers by partnering with external stakeholders to improve access for underserved populations. The data-driven approach outlined in the first imperative (pg. 8) informs where to focus efforts (i.e., who did you identify as having the worst access and outcomes? What barriers did this population identify through qualitative input?). Programs can then work with community organizations or cross-industry partners to tailor outreach and address the identified structural barriers.

Tip: Consider expanding existing relationships that your health system or service line has with community organizations. The aim is to provide disease education or connect patients to services that help with transportation or financial support.

EXAMPLE OPPORTUNITIES FOR COMMUNITY PARTNERSHIP

- Local food banks
- Nonprofit organizations
- Local community or religious centers

EXAMPLE OPPORTUNITIES FOR CROSS-INDUSTRY PARTNERSHIP

- Life sciences companies
- Payers
- Post-acute and outpatient facilities

TACTIC IN ACTION

HCA Healthcare and Johnson & Johnson partner to advance equity

Major hospital operator, HCA Healthcare, recently announced a partnership with life sciences company, Johnson & Johnson, to improve health equity. The partnership plans to create a pilot to support early detection of lung cancer in Black patients, improve nurse education, and study the impact of digital technology on improving care for cardiovascular patients.

> We believe strongly in the power of strategic partnerships, and we are excited to collaborate to advance health equity.
>
> **Sam Hazen, CEO**
> HCA Healthcare

> No one company can solve society's most pressing health challenges alone – **it takes collaboration.**
>
> **Joaquin Duato, CEO**
> Johnson & Johnson

Source: Japsen, B. "Johnson & Johnson And Hospital Giant HCA To Tackle Health Equity," *Forbes*, 2022; Advisory Board interviews and analysis.

TACTICS IN ACTION

University of Chicago Medical Center uses a community partner to reach high-risk patients

The University of Chicago Medical Center partnered with the Asian Health Coalition to improve the health and wellness of ethnic minorities in their community. Asian Americans have a higher risk of CVD at a lower body weight, and there is a shortage of culturally-tailored health education specific to Asian ethnic groups. To address this, they created the CARDIO[1] program to offer linguistic and culturally competent health education for South Asian and Chinese individuals. Topics included nutrition, exercise, smoking cessation, and coping with stress.

OUTCOMES

54%
Of the 325 participants lost weight

39%
Were physically active more days of the week after 6 months

Atrium partners with community organizations to run a mobile screening program

Atrium's Sanger Heart and Vascular Institute partnered with Novant Health[2] and the Mecklenburg County Health Department to form ONE Charlotte Health Alliance. ONE Charlotte Health Alliance works to help overcome socioeconomic barriers that inhibit access to care with the goal of improving health outcomes and equity for underserved populations.

The organization runs a mobile clinic that visits patients in community locations and helps resolve transportation issues and other barriers to care. The clinic offers screenings[3] and facilitates medical appointments along with providing food assistance, cooking tutorials, and dietary education. Through the program, the community has seen increased engagement between underserved and under-resourced populations and their medical care. Over 100 people are regularly seen through the program, and many have experienced weight loss and blood pressure reductions. Additionally, there has been an increased number of new patient visits established with PCPs and cardiologists, and patients have demonstrated improved appointment access with lower no-show rates.

1. Cardiovascular Awareness Recognizing Diet and Integration of Exercise Options. Funding for the CARDIO program provided by the AstraZeneca HealthCare Foundation.
2. A four-state integrated system of physician practices, hospitals, and outpatient centers serving Virginia, North Carolina, South Carolina, and Georgia.
3. Screening for weight, blood pressure, and glucose levels.

Source: The University of Chicago Medicine and Asian Health Coalition; Atrium Sanger Heart and Vascular Institute; Advisory Board interviews and analysis.

03 Instill a program culture of patient trust and engagement

Dimensions of health equity | Workforce diversity, equity, and inclusion; social needs and community outreach; staff training; governance

In addition to referral bias, patient refusal and hesitancy to pursue treatment are common reasons to not undergo AVR. However, it's important to avoid placing blame on the patient and understand how decisions to not undergo care can largely be attributed to the institutional and systemic barriers. Studies attribute historic mistrust in the health care system, a lack of understanding about the diagnosis and treatment options, and uninsured status with an increased likelihood of delaying or refusing treatment.

Top reasons patients with severe AS do not undergo AVR

REFERRAL BIAS
Certain patient populations are more likely to be referred to specialty care than others

PATIENT REFUSAL
Patient declines pursuing any further treatment

PATIENT HESITANCY
Patient delays seeking or continuing care

Experiences of discrimination within the health care system can influence a patient's likelihood to trust providers and their treatment decisions. Even after a cardiology consultation, a high percentage of patients decline to pursue further treatment, underscoring the importance of fostering trust during patient encounters. Programs should work on building trust by providing resources and opportunities that enable patient involvement in treatment decisions and enhance patient comfort with receiving care. Organizations should also invest in an organization-wide health equity strategy by developing a leadership structure that is equipped to tackle their health equity goals. Examples include creating dedicated senior leadership roles such as a director, VP, or Chief Health Equity Officer whose purview is solely over advancing health equity.

Source: Advisory Board interviews and analysis.

Keys to creating a program culture that instills trust and engagement

1. Help patients understand what to expect throughout the care journey

Programs should ensure patients receive informational resources so they feel prepared and engaged throughout the care process (i.e., understanding their treatment options and being aware of what decisions will be made and how they can weigh-in on those decisions). Equally important is facilitating access to eligibility information and providing resources to help navigate options for affording care. Studies show that uninsured non-White patients may be unaware of their eligibility for government support programs such as Medicaid.

DATA SPOTLIGHT

53%

Of patients are not well informed before they meet to discuss AS treatment options

17%

Of patients report not having enough information to make a good decision about an AS treatment option

TACTIC IN ACTION

Mayo Clinic provides patient resources to help set expectations for treatment

Mayo Clinic's patient resource center provides detailed explanations of what patients can expect from the treatment process, including explanations and diagrams of the different options for treating aortic stenosis. Resources also provide specific guidelines for how a patient can prepare for their visit with a SH specialist.

RESOURCE SNAPSHOT

Preparing for your appointment

WHAT YOU CAN DO
Recommended steps for a patient prior to their appointment

WHAT YOU CAN ASK
List of sample questions for the patient to ask the doctor

WHAT YOU CAN EXPECT
List of sample questions the patient should expect to be asked by the doctor

Source: American College of Cardiology, "Feature | Aortic Stenosis: Challenges for Shared Decision-Making", *Cardiology Magazine*, 2021; : Mayo Clinic "Patient Care & Health Information: Aortic valve disease" *Mayo Foundation for Medical Education and Research (MFMER);* Advisory Board interviews and analysis.

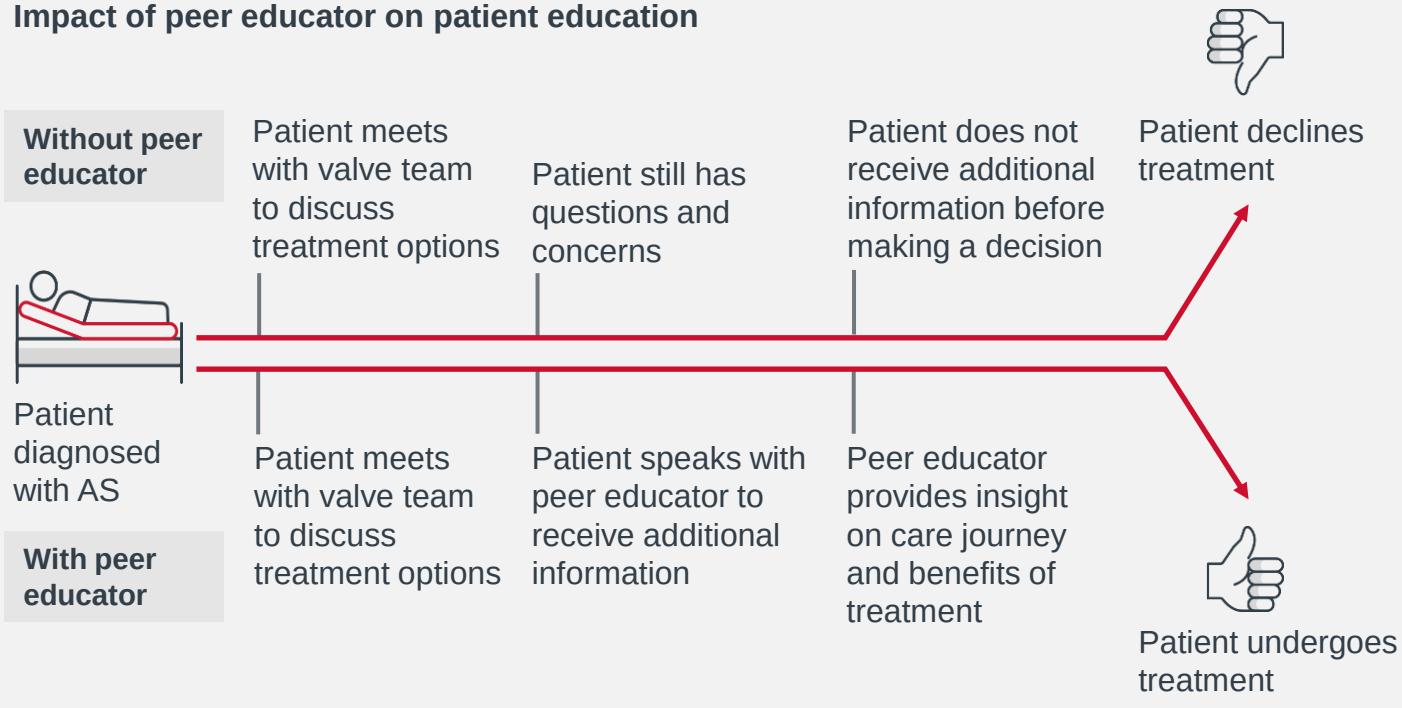
TACTIC IN ACTION

Eisenhower Health leverages peer educators to provide patient education

Eisenhower Health has a two-pronged approach to patient education that involves both the valve team and peer educators. After meeting with the valve team, patients can speak with a peer educator who has undergone the same procedure. The goal of this is to address any lingering questions, concerns, or apprehensions to undergo treatment.

Speaking with a peer educator before making a treatment decision provides patients with a better understanding of the care pathway and treatment benefits. At Eisenhower, this strategy minimizes refusal to undergo treatment, with patients being more willing to have their workup and procedure done after speaking with a peer educator. Patients have shared feedback on how helpful it is to speak with someone who has already been through the process and how it encouraged them to receive treatment.

Impact of peer educator on patient education



Source: Eisenhower Medical Center; Advisory Board interviews and analysis.

2. Practice shared decision making (SDM) to foster patient engagement

When determining the appropriate course of treatment for valve disease, providers must consider clinical evidence that balances risks and expected outcomes with patient preferences and values. Programs can do this by implementing shared decision making. Involving patients, caregivers, and families in treatment decisions builds trust within the encounter while helping patients maintain a degree of control over their care. This collaboration promotes patient engagement and is associated with greater identification of preventable complications and improved adherence to the care plan.

DATA SPOTLIGHT

53%

Of interventional and non-interventional cardiologists think patient decision aids and a list of prepared questions pre-appointment would be valuable

65%

Of interventional and non-interventional cardiologists report that these resources would help patients have a clearer understanding of the risks and benefits of different treatment options[1]

Leverage decision aids to execute SDM

Decisions aids are helpful tools for enabling SDM. Providers can use decision aids to educate patients about available treatment options and help them evaluate the benefits and drawbacks of options based on their needs and preferences.

Publicly available decisions aids for patients with AS

1. ACC Cardiosmart Decision Aids (available in English, Spanish, French)
2. PCORI-Sponsored Decision Aid
3. MAGICapp (BMJ Rapidrecs)

1. Clearer understanding is associated with better-quality discussions, increased patient satisfaction, and decreased nuance about treatment options.

Source: Source: American College of Cardiology, "Feature | Aortic Stenosis: Challenges for Shared Decision-Making", *Cardiology Magazine*, 2021; Advisory Board interviews and analysis.

3. Cultivate a workplace that is committed to inclusion

While simply having a provider of the same race and ethnicity does not guarantee a trusting relationship, recent studies demonstrate its benefits. When providers and patients share the same race or language, there is improvement in the time spent together, medication adherence, shared decision making, wait times for treatment, and patient perceptions of treatment decisions. Care quality is also improved by understanding the effect of other forms of patient-provider social concordance such as shared immigrant status, religion, LGBTQ+ status, socioeconomic background, or disability. Broadly, the aim is to help connect patients with providers they relate to.

Today's health care workforce doesn't reflect the patients served. Non-White patients are significantly less likely than White patients to have a health care provider of the same race. Compared with 73.8% of White adults, only 22.2% of Black adults and 34.4% of adults of other races reported being the same race as their health care providers. Underrepresentation is even more prevalent in cardiology, where only 3% of the physician workforce is Black and 4.2% is Latinx. Increasing workforce diversity to match local demographics will take years, if not decades. In the meantime, there are steps programs can take to cultivate a culture of diversity and inclusion among their staff. Programs should also educate all staff on how to deliver culturally humble care to ensure they don't place the burden on underrepresented staff to support all underrepresented patients.

Steps for fostering a diverse clinical workforce

- ☐ Align with (and promote) enterprise-level health equity efforts
- ☐ Educate clinicians and staff about existing disparities in diagnosis and treatment rates
- ☐ Advocate for bias training to help clinicians and team members recognize their own implicit biases
- ☐ Promote hiring practices that create a diverse workforce reflective of the patient population

Source: Johnson et al., "Racial Diversity Among American Cardiologists: Implications for the Past, Present and Future", *Circulation*, 2021; Huerto, R., "Minority Patients Benefit From Having Minority Doctors, But That's a Hard Match to Make", *University of Michigan Health Lab Rounds*, 2020; Advisory Board interviews and analysis.

Putting it all together: Creating an actionable health equity strategy

Why is having a defined health equity strategy important?

Improve awareness of existing disparities

Scope direction for action

Address and avoid unintentional biases

Foster accountability and track progress

Who's leading the charge? To name a few…

MEDICAL ASSOCIATIONS AND PROFESSIONAL ORGANIZATIONS

- The Association of Black Cardiologists convened a Structural Heart Disease Task Force of diverse clinician and industry professionals to discuss disparities in contemporary care of minority patients with Valvular Heart Disease. They also provided a summary of proposed solutions and immediate action items to address access and treatment disparities.
- The American Heart Association's Target: Aortic Stenosis initiative, a quality improvement program that targets effective identification and appropriate treatment of structural heart disease. Partners with hospitals/health systems across the country to pilot best practice treatment protocols.
- The Society for Cardiovascular Angiography and Interventions is committed to reducing racial disparities in interventional cardiology care and improve diversity and inclusion.

HEALTH SYSTEMS AND COMMUNITY PARTNERS

- Inova Heart and Vascular Institute is taking action to address health disparities by educating their surrounding community about heart health and symptom identification, working with translators and family members to ensure patients understand treatment recommendation, and planning future outreach efforts to reach patients in underserved areas.
- University of Minnesota and Mayo Clinic received a $19.4 million grant[1] to start a new research center focused on the root causes of health inequities and racial disparities in cardiovascular health. The new center will work with the Center for Antiracism Research for Health Equity.
- Penn Medicine recently purchased Mercy Catholic Medical Center, located in West Philadelphia and provides care to a predominantly Black population on Medicaid. Access to services there has been largely streamlined to make it easier for patients.

1. Five-year grant from the National Institute of Minority Health

Source: Advisory Board interviews and analysis.

The eight dimensions of a health equity strategy, in practice

Dimension	Implementation
 **Governance**	• Create an advisory committee to oversee and spearhead health equity improvement • Collaborate with enterprise leaders and establish C-suite buy-in to support advancing broader health equity initiatives
 **Goals**	• Ensure your program's health equity initiatives align with those of the broader enterprise • Set both short- and long-term goals to ensure immediate improvements and sustained impact • Goals should be measured using both quantitative and qualitative metrics
 **Data collection**	• Explore data-sharing partnerships and collect qualitative equity data through internal and external forums (e.g., surveys of referring providers or community advisory boards) to supplement existing data and guarantee representation of all populations served • Partner with NIH and other industries conducting studies to encourage inclusion of more women and minority patients in clinical trials in the interventional cardiology field
 **Data analysis**	• Analyze stratified clinical, operational, and patient experience metrics and identify improvement opportunities • Layer multiple patient identities at once to better understand how different types of oppression and privilege interact to impact outcomes • Create a dashboard to track data and transparently share outcomes to hold staff accountable for reaching equity goals
 **Staff training**	• Educate clinicians and staff on existing disparities in diagnosis and treatment rates • Identify and address root issues of inequity that are within the control of individual staff • Offer appropriate cultural competency training focused on language concordance and providing culturally sensitive care
 **Holistic care**	• Help reduce barriers to access both inside and outside the clinical setting: – Secure transportation for appointments – Provide interactive patient education and preparation materials – Leverage care navigators to help facilitate steps across the SH care journey – Offer or expand prehab and cardiac rehab services
 **Workforce diversity, equity, and inclusion**	• Work towards having a clinical staff that's reflective of the patient population • Set defined goals for improving diversity in your workforce – Track percentage of physicians and staff by sex and race/ethnicity – Track percentage of women and minorities in leadership positions
 **Social needs and community outreach**	• Expand screening and educational resources to underserved communities • Partner with community organizations to improve outreach and expand access for SH services

Source: Advisory Board interviews and analysis.

Conversations you should be having

01 Partner with service line and system leaders to advance health equity efforts

02 Collect REGAL, SDOH, and qualitative data to identify existing inequities in your structural heart program

03 Foster a more diverse and culturally humble clinical workforce, and train all staff in culturally humble care delivery

04 Partner with trusted community organizations to improve outreach and access for underserved communities

These conversations will support a holistic health equity strategy that creates alignment among service line and system leaders. They will also ensure your program has the data needed to identify and act on health equity opportunities, a clinical workforce that is committed to inclusion, and create an opportunity for all members of the community to have access to care and a better understanding of SH procedures.

Source: Advisory Board interviews and analysis.

Appendix

MaineHealth Aortic Stenosis Referral Guideline

HIGH RISK SUGGESTED EMERGENT CONSULTATION	MODERATE RISK SUGGESTED CONSULTATION OR CO-MANAGEMENT	LOW RISK SUGGESTED ROUTINE CARE
SYMPTOMS AND LABS Stage C & D: Symptomatic, dyspnea on exertion, exertional chest pain, lightheadedness, lower extremity edema, PND, orthopnea or syncope Significant heart murmur on exam Severe leaflet calcification with reduced leaflet mobility AVA< 1cm2, Aortic Vmax > 4 m/s, Mean trans aortic pressure is > 40mmHg, SVI < 35ml/m2, with or without reduced LV function. Patients with a mean trans-aortic gradient of greater than 60mmHg	**SYMPTOMS AND LABS** Asymptomatic Stage B Heart murmur by exam Echocardiogram showing moderate aortic stenosis: V max 3.0-3.9m/s, AVA > 1.0, mean gradient 20-40mmHg. Normal LV function, early diastolic dysfunction	**SYMPTOMS AND LABS** Asymptomatic Stage A & B Heart murmur by exam Echocardiogram showing mild aortic stenosis (Vmax 2.0-2.9m/s)
SUGGESTED PREVISIT WORKUP Referral to cardiology or advanced heart valve clinic at the Maine Medical Center For acute symptoms, consider hospitalization Cardiac catheterization	**SUGGESTED WORKUP** Monitor and educate patient on symptoms Echocardiogram every 1-2 years Guideline Directed Medical Therapy for HTN Consider referral to cardiology	**SUGGESTED MANAGEMENT** Monitor for symptoms Echocardiogram every 3-5 years or based on clinical findings Guideline Directed Medical Therapy for HTN

CLINICAL PEARLS

Stages of Aortic Stenosis

- A: At Risk
- B: Progressive- mild to moderate in severity
- C1: Asymptomatic Severe Stenosis when the LV/RV are compensated
- C2: Asymptomatic Severe when the LV/RV are decompensated
- D1: Symptomatic patients with high flow high gradient AS
- D2: Symptomatic patients with low flow low gradient AS
- D3: Symptomatic patients with paradoxical low flow low gradient AS

Maine Medical PARTNERS
A department of Maine Medical Center

Approved by MMC/MH Advanced Valve Team 7/31/19, Clinical owner: David Butzel, MD; Administrative owner: Richard Veilleux

MaineHealth

Source: MaineHealth, "Clinical Guidelines" 2022; Advisory Board interviews and analysis.

Appendix

Alexian Brothers provider outreach template

Valvular Heart Disease Diagnosis Notification

Dr. NAME
ADDRESS

Date

Dear Dr. _____,

AMITA Health is dedicated to providing comprehensive care to all patients. To facilitate communication with our referring physicians, the Non-Invasive Cardiology Department has implemented a quality initiative identifying patients with significant valvular heart disease.

Based on the echocardiogram performed on _____, your patient _____ was diagnosed with *Severe Aortic Stenosis*.

The AHA/ACC Guidelines* recommend that echocardiography be repeated at an interval of 6-12 months (or sooner should new symptoms develop).

If considering intervention, evaluation by a multidisciplinary Heart Valve Team may be appropriate.

Thank you for taking the time to review this information. If your patient is not already followed by a cardiologist, a comprehensive list of on-staff cardiovascular specialists can be found at http://www.amitahealth.org/heart, or by contacting The AMITA Health Call Center at 855-692-6482 (1-855-MY-AMITA). Patients can be scheduled for multidisciplinary consultation in the AMITA Health Valve Clinic by calling 847-640-5632.

Sincerely,

The AMITA Health Heart & Vascular Institute
Department of Non-Invasive Cardiology

*Nishimura RA, Otto CM, Bonow RO, Carabello BA, Erwin JP III, Guyton RA,O'Gara PT, Ruiz CE, Skubas NJ, Sorajja P, Sundt TM III, Thomas JD, 2014 AHA/ACC Guideline for the Management of Patients With Valvular Heart Disease, Journal of the American College of Cardiology (2014), doi:10.1016/j.jacc.2014.02.536.

Source: Alexian Brothers Medical Center; Advisory Board interviews and analysis.

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