Early Detection, Prompt Referral & Timely Aortic Valve Replacement for Patients with Asymptomatic Severe Aortic Stenosis

Authors: Philippe Genereux, MD, Katie Worthington, DNP, Carrie Reddick, MSN, RN, NEA-BC, Gennaro Giustino, MD, and Linda Gillam, MD

Morristown Medical Center, Atlantic Health System

Introduction

Aortic stenosis (AS) is a progressive and deadly disease if left untreated. Recent data from 4 randomized trials (1-4) and 1 meta-analysis (5) suggested benefits of early treatment compared to clinical surveillance for patients with asymptomatic severe AS (Figures 1 and 2). Based on those findings, and in line with the primary performance measures of the American Heart Association's (AHA) Target: Aortic Stenosis (Target: AS) initiative (6) (Figure 3), early detection and prompt referral are crucial to ensure optimal management of AS patients. Recently, Morristown Medical Center, Morristown, NJ, USA, part of the Atlantic Health Care system in New Jersey, developed an AS awareness initiative to identify patients with AS requiring assessment and potentially, treatment.

Objectives

The objective of the AS awareness initiative is to identify patients with potentially severe AS on echocardiogram and ensure all testing has been completed (a co-primary performance measure for the Target: As initiative), refer patients with suspected severe AS to a multidisciplinary heart valve team (MDT) (a secondary performance measure for the Target: Aortic Stenosis initiative) and to potentially, provide timely treatment for indicated patients (a co-primary measure of the Target: AS initiative).

Methods

Since February 2023, three distinct phases have been implemented.

Phase One

Egnite CardioCare's echocardiogram report natural language processing (NLP) software was used system-wide to identify potential candidates for two randomized trials: asymptomatic severe AS patients for the EARLY TAVR trial, *Evaluation of TAVR Compared to Surveillance for Patients With Asymptomatic Severe Aortic Stenosis*, and moderate AS patients for the PROGRESS trial, *Management of Moderate Aortic Stenosis by Clinical Surveillance or TAVR*. The software also identified severe AS patients who met ACC/AHA guidelines' class 1 indication for treatment. Patients were triaged manually from a generated list and clustered by referring providers to help efficient and targeted outreach. Peer-to-peer phone calls were then performed to discuss patients and potential referrals.

Phase Two

A system-wide automated letter was sent directly to patients and treating physicians when class 1 indication for aortic valve replacement was met on most recent echocardiogram. Patients were informed in the letter to contact their physicians and/or the local valve center for referral for further assessment and potential treatment.

Phase Three

In this ongoing phase, various screening programs are being launched that utilize artificial intelligence (AI) tools such as Echo IQ, EchoNext and the EKO electronic stethoscope in primary care settings to help identify heart murmurs and potential structural heart disease requiring further assessment.

Results

Key lessons learned across the three implementation phases include the importance of educating treating physicians on the rationale behind this initiative both prior to and during each phase, to ensure understanding and engagement.

Active involvement of members of the multidisciplinary heart team including nurses, cardiologists, interventional cardiologists, and cardio-thoracic surgeons, was necessary to ensure alignment and shared understanding of the initiative's goals. It is also important to respect the pre-existing referral pathways.

High-quality echocardiograms were essential to ensure appropriate diagnosis and the use of supporting NLP AI tools to facilitated patient identification, triage, and communication with the treating physician.

Strong administrative support was also necessary to ensure availability of all required resources.

Finally, informed shared decision-making discussions with the patients were also crucial to ensure appropriate understanding of the initiative's goal.

Conclusions

Aligned with the AHA Target: AS national initiative, a system-wide program has been implemented at Morristown Medical Center and across the Atlantic Health Care System to ensure and facilitate early detection, outreach, and referral of patients with clinically significant AS who may require aortic valve replacement. The use of complementary NLP and AI tools has been essential to the success of this program.

Figure 1

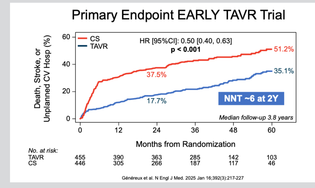


Figure 2

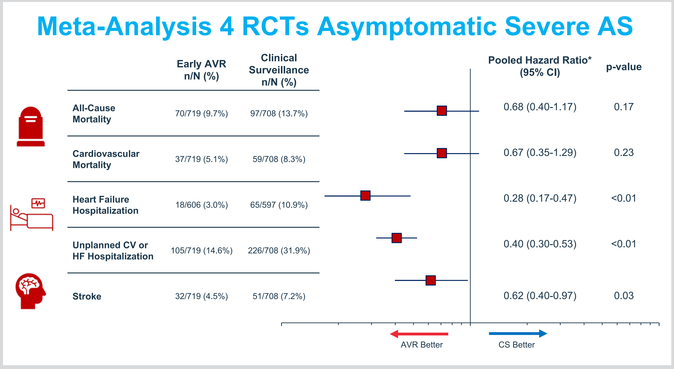
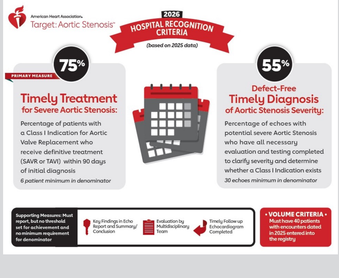


Figure 3



References

1. Kang DH, Park SJ, Lee SA et al. Early Surgery or Conservative Care for Asymptomatic Aortic Stenosis. N Engl J Med 2020;382:111-119.
2. Banovic M, Putnik S, Da Costa BR et al. Aortic valve replacement vs. conservative treatment in asymptomatic severe aortic stenosis: long-term follow-up of the AVATAR trial. Eur Heart J 2024;45:4526-4535.
3. Loganath K, Craig NJ, Everett RJ et al. Early Intervention in Patients With Asymptomatic Severe Aortic Stenosis and Myocardial Fibrosis: The EVOLVED Randomized Clinical Trial. JAMA 2025;333:213-221.
4. Genereux P, Schwartz A, Oldemeyer JB et al. Transcatheter Aortic-Valve Replacement for Asymptomatic Severe Aortic Stenosis. N Engl J Med 2025;392:217-227.
5. Genereux P, Banovic M, Kang DH et al. Aortic Valve Replacement vs Clinical Surveillance in Asymptomatic Severe Aortic Stenosis: A Systematic Review and Meta-Analysis. J Am Coll Cardiol 2025;85:912-922.
6. Lindman BR, Fonarow GC, Myers G et al. Target Aortic Stenosis: A National Initiative to Improve Quality of Care and Outcomes for Patients With Aortic Stenosis. Circ Cardiovasc Qual Outcomes 2023;16:e009712.