VANDERBILT UNIVERSITY MEDICAL CENTER

Tempus Clinical Automation to Support Quality Improvement in Management of Aortic Stenosis

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Introduction

Aortic stenosis (AS) is a progressive, life-threatening valve disease if left untreated. Timely referral to a multidisciplinary heart valve team and adherence to evidence-based follow-up guidelines are key components of quality care, as emphasized by AHA's Target: Aortic Stenosis initiative. Despite guidelines, gaps persist in referral, treatment, and surveillance of AS. Manual data abstraction and follow-up coordination are time-intensive and prone to inconsistency. As part of the Addressing Under-treatment and Health Equity in AS and MR Using an Integrated EHR Platform (ALERT) trial, Tempus, a clinical automation platform, is being evaluated for its ability to scale process improvements through electronic health record (EHR) integration and automated provider nudges.

Objectives

To evaluate the use of Tempus as a scalable solution to:

Improve timely diagnosis of severe AS (a co-primary performance measure for the Target: Aortic Stenosis initiative) and referral of patients with suspected severe AS to the multidisciplinary heart valve team (MDT) (a secondary performance measure for the Target: Aortic Stenosis initiative).

Methods

Our site effort was part of a larger multicenter randomized trial testing the effect of EHR-based nudges to improve referral to the MDT and timely treatment of AS. Tempus was deployed at our site to function as an automated, EHR-integrated clinical decision support tool within EPIC. It operated in the background to scan patient records for echocardiograms performed showing definite or possibly severe AS (e.g., aortic valve area (AVA) <1.0cm2, peak velocity >4 m/sec, etc.). For such patients without evidence of an existing visit with or referral to the MDT, the ordering clinician was randomized to receive (or not receive) an automated message to the ordering clinician's Epic in-basket highlighting the echocardiogram (echo) finding and encouraging them to consider further evaluation by referring the patient to the MDT. A streamlined order option was provided to facilitate the referral. The primary endpoint of the trial is a hierarchical composite evaluating the percentage of patients treated with aortic valve replacement within 90 days of the echo, or the percentage of patients evaluated by the MDT within 90 days of the echo.

Results

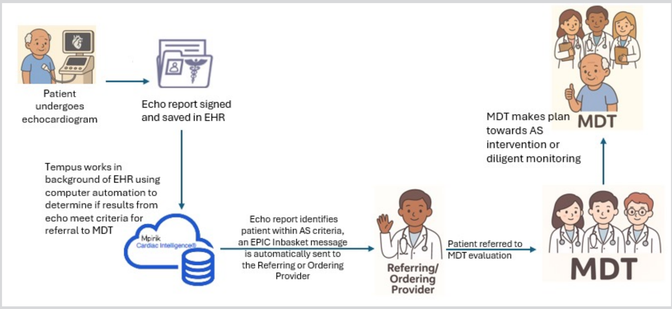
Enrollment of patients into the trial started on October 2nd, 2024, and ended August 31st, 2025, and included 388 patients flagged as meeting criteria for AS referral. Final follow-up of the ALERT trial is ongoing, and the results will be reported in Spring 2026.

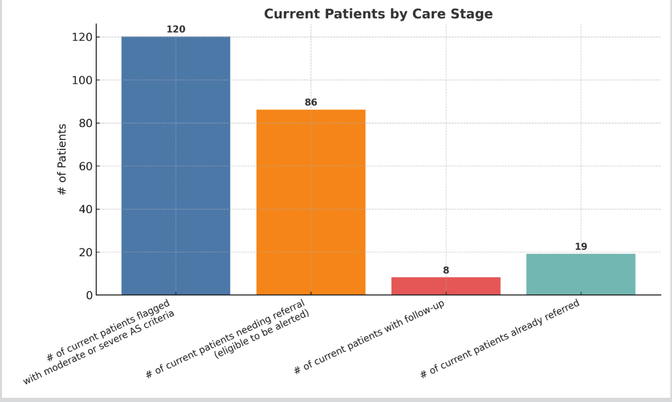
The graph below shows examples of data points Tempus can provide and track through reports from our site below. The data presented in this graph are from a pilot analysis in September 2023.

Conclusions

Tempus offers an opportunity to deploy nudges and reminders at scale to improve the management and treatment of patients with AS. It may also reduce abstractor burden for data entry for Target: Aortic Stenosis and other quality registries. Anticipated future directions for use of Tempus relevant to Target AS include:

- Automated messages to improve timely follow-up for surveillance echocardiograms for moderate and severe AS
- Generate reports on patients with varying/specific degrees of AS within the EHR to quickly identify subgroup populations for chart abstraction
- AI-enabled ECG integration for earlier AS detection
- Automated opt-out referrals to valve clinics
- Streamlined data abstraction for the AHA registry





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Tempus Platform Overview. [https://www.tempus.com/]