Efficacy of Tafamidis in Transthyretin Amyloid Cardiomyopathy in the ATTR-ACT Trial

Background: Transthyretin cardiomyopathy (ATTR-CM) is an underdiagnosed, fatal disease caused by the deposition of transthyretin amyloid fibrils in the heart leading to heart failure (HF). It can be hereditary due to mutations in the TTR gene (ATTRm) or acquired (wild-type [ATTRwt]). Tafamidis is a selective transthyretin stabilizer which prevents tetramer dissociation and amyloidogenesis. The Tafamidis in Transthyretin Cardiomyopathy Clinical Trial (ATTR-ACT) was an international, multicenter, double-blind, placebo-controlled, randomized trial of Tafamidis in patients with ATTR-CM.
Objectives: Given the limited number of patients with ATTR-CM, a novel study design was utilized to enable rigorous testing of the efficacy of tafamidis on hard cardiovascular (CV) endpoints in a study of relatively modest size compared with traditional CV trials. The primary results of this trial were further supported through the application of pre-specified sensitivity analyses.
Methods: Patients with ATTR-CM were randomized (2:1:2) to tafamidis (80 mg or 20 mg of tafamidis meglumine), or placebo (orally, once daily), for 30 months. Enrollment was stratified by NYHA class and genotype. The primary efficacy analysis was a hierarchical combination of all-cause mortality and frequency of CV-related hospitalizations comparing the pooled tafamidis groups (20 mg and 80 mg) vs. the placebo group using the Finkelstein-Schoenfeld (F-S) method. The primary efficacy analysis result was examined using a series of sensitivity analyses. Key secondary endpoints were change from baseline to Month 30 in the six-minute walk test distance and the Kansas City Cardiomyopathy Questionnaire (KCCQ) overall score. Safety assessments included adverse events, vital signs, and clinical laboratory tests.
Results: A total of 441 patients were randomized (tafamidis=264, placebo=177). Tafamidis was associated with a significant reduction in the hierarchical combination of all-cause mortality and CVrelated hospitalizations ($P<0.001$). Tafamidis also significantly reduced the decline in both the six-minute walk distance (by 75.68 m [standard error, 9.24]; $P<0.001$]),and KCCQ overall score (by 13.65 [2.13]; $P<0.001$) as compared with placebo. Sensitivity analyses consistently confirmed the efficacy of tafamidis in patients with ATTR-CM: there was a 30% reduction in risk of all-cause mortality (heart transplant and implantation of a cardiac mechanical assist device treated as death) with tafamidis compared with placebo (P=0.0259); and when heart transplant and implantation of a cardiac mechanical assist device were not treated as death, there was a 33% reduction in risk of all-cause mortality with tafamidis compared with placebo (P=0.018). Tafamidis was safe and well tolerated in this population.
Conclusions: ATTR-ACT, the largest randomized controlled trial in ATTR-CM, showed that tafamidis is the first treatment to improve survival and quality of life in ATTR-CM. Significant and clinically meaningful improvements were observed in functional capacity as measured by the six-minute walk distance and quality of life by KCCQ overall score. Sensitivity analyses confirmed the robustness of these results. Tafamidis was safe and well tolerated. The primary trial results, along with the sensitivity analyses described here, provide strong rationale for the use of tafamidis as first-line therapy in ATTR-CM.

The Effect of a Nurse-Driven Program Utilizing Implantable Pulmonary Artery Pressure Monitoring to Reduce Hospitalizations in Low-Socioeconomic Urban Patients with Heart Failure

Background: Hospitalizations in patients with heart failure (HF) remain high despite advances in treatment. While implantable pulmonary artery pressure monitors (Abbott CardioMEMS) reduce readmissions in largely white and male cohorts, their efficacy in poor, minority populations are not known. We hypothesized that a nurse-driven program using the CardioMEMS device could reduce HF hospitalizations in such patients.
Methods: 22 high-utilizing patients (86% non-white, 55% female) with NYHA Class III HF were implanted with a CardioMEMS following a hospital admission for HF. Data from the CardioMEMS guided a speciallytrained nurse in adjusting medications. Enrolled patients were matched using 30 clinical and demographic variables with contemporaneous control HF patients who received usual care. Each patient's hospitalizations were recorded for 6 months and compared using Fisher's exact test.
Results: Patients who received a CardioMEMS experienced a 61% decrease in HF-related readmission and a 70% reduction in HF-related ED visits ($p<0.01$ for both). Additionally, 19 out of the 22 CardioMEMS patients did not have any HF-related admissions after device implant. Time to first HF-related readmission (Figure) and first HF-related ED visit were both longer in CardioMEMS patients ($p<0.01$ for both) and cumulative rehospitalized days were significantly lower in the CardioMEMS patients.
Conclusion: A nurse-driven CardioMEMS program reduces HF-related hospitalization and ED visits among high-risk, low-socioeconomic, urban patients.

Heart Failure Nurse Navigator Program Interventions Based on LACE Scores Reduces Inpatient Heart Failure Readmission Rates

Objective: This presentation will identify top causes for Heart Failure (HF) patient readmissions and strategies for HF readmission prevention. The HF Nurse Navigator's role in preventing readmissions will be described. The implementation of the HF standard work discharge tool with seven interventions based on LACE scores used in the HF Nurse Navigator program will also be defined.
Background: Heart Failure continues to be one of the leading causes for hospitalization (national 30-day All-Cause HF readmission rates average: 22%). The goal of this community hospital is to decrease their average 30-day All-Cause HF patients' readmission rates from 21% to <17% post-intervention of the HF Nurse Navigator program.
Problem Statement: Increasing Heart Failure readmission rates due to avoidable readmission causes are unfavorable for our cardiac patients' quality of life and contribute to payment penalties.
Methods: The Heart Failure Nurse Navigator (HF NN) role was created at this hospital with the goal of decreasing readmissions and improving patient outcomes for the HF patient across the continuum of care. The HF NN is an expert clinician leader and a resource to the healthcare team in Progressive Care and other inpatient units through one-on-one HF education with the patient or significant other, and assists in identification of services unique to each patient's needs for a smooth transition from hospital to home. New Nurse Leader roles such as an Advanced Practice Nurse Navigator equipped with EvidenceBased knowledge and training is vital to oversee a specialized patient population in Acute Care; to design and implement interventions that can improve patient outcomes and decrease the patient's risk for readmission within 30 days. The HF NN in collaboration with the HF Team designed a Quality Improvement project implementing a HF Standard Work Discharge Checklist with seven patient interventions for the Acute Heart Failure patient. These interventions include: HF Teach-Back education; HF clinic referral; Outpatient pharmacy prescription delivery to bedside; Discharge Medication list education by the Pharmacist; Follow-up appointments made prior to discharge; Transitional Medical Clinic appointment within 5 days of discharge; and Home Health RN HF Medical Management. LACE (Lengthof-Stay, Acuity, Co-Morbidities and ED visits) scoring developed by Van Walvaren et al. (2010) was used to assess for readmission risk and to implement interventions specific for each HF patient based on their LACE score.
Results: This hospital's average 6-month All-Cause HF readmission rate decreased to 12.94% after the pilot of the HF Nurse Navigator program, vs. 21.1% pre-intervention. After the HF NN role was