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### Chronotropic incompetence and long-term risk of heart failure: The henry ford exercise testing project

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## Heart Failure and Cardiomyopathies

### CHRONOTROPIC INCOMPETENCE AND LONG-TERM RISK OF HEART FAILURE: THE HENRY FORD EXERCISE TESTING PROJECT

Moderated Poster Contributions

Heart Failure and Cardiomyopathies Moderated Poster Theater, Poster Hall, Hall C  
Saturday, March 18, 2017, 4:00 p.m.-4:10 p.m.

Session Title: Risky Business: Predicting Outcomes in Heart Failure

Abstract Category: 13. Heart Failure and Cardiomyopathies: Clinical

Presentation Number: 1265M-05

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**Background:** Chronotropic incompetence (CI) has been associated with cardiovascular mortality. However, its relationship with long-term risk of heart failure (HF) is not well studied.

**Methods:** We included 43,098 participants (mean age  $51.7 \pm 12.3$  years, 47.5% females, 66.6% white) of the FIT project who completed a clinically indicated exercise test between 1991 and 2009. Patients with coronary artery disease, prior HF or on heart rate reducing medications were excluded. Incident HF was defined by having a documented diagnosis in 3 separate clinical encounters. CI was defined by inability to achieve 85% of maximal age predicted heart rate (calculated by  $220 - \text{age}$ ) with exercise. Multivariable adjusted Cox models were used to assess the independent association of CI with incident HF.

**Results:** At baseline, 5,249 (12.2%) had CI. After a mean follow-up duration of  $10.9 \pm 4.6$  years, 1329 (3.2%) experienced new onset HF. The cumulative incidence of HF was 397 (7.6%) among CI patients compared with 992 (2.6%) among chronotropic competent patients. Figure 1 shows the cumulative incidence of heart failure by CI status. In multivariable Cox regression models, CI was associated with increased risk of incident heart failure (HR 1.73; 95% CI 1.48 - 2.03,  $p < 0.001$ ) after adjusting for confounders. There were no interactions by age, sex, race, body mass index.

**Conclusions:** Our study shows that CI is an independent risk factor for HF. Further research is needed to determine whether CI could be a therapeutic target for HF.

Figure 1: Kaplan - Meier's plot for heart failure by chronotropic incompetence

